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TO THE
WORLD HEALTH ASSEMBLY
AND TO THE
UNITED NATIONS**

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WORLD HEALTH ORGANIZATION

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March 1971

The following abbreviations are used in the *Official Records of the World Health Organization*:

ACABQ	— Advisory Committee on Administrative and Budgetary Questions
ACC	— Administrative Committee on Co-ordination
CIOMS	— Council for International Organizations of Medical Sciences
ECA	— Economic Commission for Africa
ECAFE	— Economic Commission for Asia and the Far East
ECE	— Economic Commission for Europe
ECLA	— Economic Commission for Latin America
FAO	— Food and Agriculture Organization of the United Nations
IAEA	— International Atomic Energy Agency
IARC	— International Agency for Research on Cancer
ICAO	— International Civil Aviation Organization
ILO	— International Labour Organisation (Office)
IMCO	— Inter-Governmental Maritime Consultative Organization
ITU	— International Telecommunication Union
PAHO	— Pan American Health Organization
PASB	— Pan American Sanitary Bureau
UNCTAD	— United Nations Conference on Trade and Development
UNDP/SF	— United Nations Development Programme, Special Fund component
UNDP/TA	— United Nations Development Programme, Technical Assistance component
UNESCO	— United Nations Educational, Scientific and Cultural Organization
UNFPA	— United Nations Fund for Population Activities
UNICEF	— United Nations Children's Fund
UNIDO	— United Nations Industrial Development Organization
UNRWA	— United Nations Relief and Works Agency for Palestine Refugees in the Near East
WFUNA	— World Federation of United Nations Associations
WMO	— World Meteorological Organization

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The designations employed and the presentation of the material in the *Official Records of the World Health Organization* do not imply the expression of any opinion whatsoever on the part of the Director-General concerning the legal status of any country or territory or of its authorities, or concerning the delimitation of its frontiers.

INTRODUCTION

***D**URING the year under review, one event occurred to which disproportionate importance was attached by many public authorities and by the public at large but that taught salutary lessons both to those nationally responsible for health and to the World Health Organization. I refer, of course, to the spread of El Tor cholera to lands long free from the disease.*

The shadow cast by this extension of the seventh cholera pandemic, however, should not be allowed unduly to darken the 1970 public health scene. A number of successful achievements can be recorded, whether in the less dramatic actions to strengthen and improve basic public health services or in the more spectacular fight against communicable and other diseases. At the same time I can hardly avoid mentioning an unevenness in progress, amounting sometimes to stagnation, in certain health activities where satisfactory advances that might reasonably have been expected have not been achieved, owing either to a slower growth in scientific or technical knowledge than was anticipated or to a lack of appreciation of, or indifference to, the scope and importance of health.

*

Turning first to those aspects of the year's work from which we can derive some comfort, it is pleasing to report further progress in both our major eradication campaigns.

For the third successive year the world incidence of smallpox declined, to reach the lowest figure that has ever been reported—approximately 30 000 cases. The number of countries reporting the disease also fell, from 30 in 1969 to 23 in 1970.

In Brazil, the only country in the Americas where endemic smallpox persists, there was a sharp fall in incidence and, for the first time, the usual seasonal rise did not occur. In Asia, there were significantly fewer cases in India and Indonesia but an increase was noted in Afghanistan, partly as an artefact of better surveillance and reporting. It had been hoped that the last cases in western and central Africa had been reported in September 1969, but there was a small outbreak in Nigeria in April 1970; the appropriate measures were taken at once and happily no further cases have been reported since May. In eastern and southern Africa, smallpox transmission continues in four countries but in only two of these is the situation seriously disturbing.

Together with an increase in smallpox surveillance activities there was an intensification of vaccination programmes in many countries, and it is fitting to pay tribute to those governments that generously made donations of vaccine as contributions to the Special Account for Smallpox Eradication or through bilateral assistance programmes.

The global programme of malaria eradication also continued to advance as additional areas with a population of 10 million entered the maintenance phase, mainly owing to progress in the programmes in Cuba, India and East Pakistan. The total number of countries or territories in the WHO official register of areas where malaria eradication has been achieved rose from 13 to 18 with the addition of Italy, the Netherlands, Puerto Rico, the United States of America and the Virgin Islands (USA).

The decline in the rate of progress in malaria eradication in recent years is largely due to the fact that the hard core of malaria endemicity has now been reached in many countries. The elimination of that hard core calls for greater effort, more resources and further research for solving the technical problems. The revised strategy of malaria eradication that has been adopted following the recommendations of the Twenty-second and Twenty-third World Health Assemblies should facilitate efforts to that end.

The possibility that man can be safely and effectively immunized against malaria grew brighter as successful immunization experiments were conducted in rodents and investigations were extended to non-human primates. Before this can become a reality, however, many technical difficulties will have to be overcome; our Organization is actively seeking ways and means of doing so.

*

Another interesting possibility emerged from a WHO meeting of investigators on immunological problems in leprosy research at which it was revealed that there is a failure of the cell-mediated type of immune response in patients with lepromatous leprosy as compared with those with the tuberculoid form of the disease. The Organization is encouraging further study of this finding with the aim of stimulating the cell-mediated response and thereby changing the lepromatous form of the disease into one more amenable to treatment.

*

The first breakthrough in what has been the very stubborn problem of hepatitis occurred some years ago when it became apparent that "Australia" antigen was closely associated with serum (though not with infectious) hepatitis. Although it is still uncertain whether this antigen is the etiological agent of serum hepatitis or an associated particle, the practical implications of the association have been so clear that large-scale schemes for reducing the incidence of serum hepatitis by testing for the presence of the antigen in blood donors, products from blood banks and persons connected with renal dialysis and similar services are already being considered in many countries. WHO has therefore obtained the views of recognized experts in the field and published a memorandum in which they describe the current laboratory tests for this hepatitis-associated antigen and its corresponding antibody and has ensured the collaboration of a number of expert laboratories in tests for the specificity and standardization of the reagents required.

*

Operational research on the eradication of human and animal trypanosomiasis that is being undertaken in Kenya with financial support from the Special Fund component of the United Nations Development Programme and in collaboration with the Food and Agriculture Organization of the United Nations (FAO) has led to the development of the first simple laboratory test by which it is possible to distinguish between Trypanosoma brucei, which is infective to animals but not to man, and T. rhodesiense, which is infective to both. Previously, the only way of differentiating between the two was by the cumbersome and undesirable method of inoculating the parasites into human volunteers; understandably, this has meant that few attempts have been made to prove the existence or determine the frequency of T. rhodesiense in wildlife. The new test now offers considerable promise for furthering epidemiological studies of the distribution of human-infective trypanosomes in reservoir animals and the Glossina vectors.

In certain parasitic diseases, operations to control the insect vectors will often be most effective if conducted throughout large ecological zones in order to prevent or minimize reinvasion by the vectors. To attempt such an extensive undertaking from the ground would be prohibitively costly in manpower, transport and time and exceedingly arduous over difficult terrain. It is therefore encouraging to report that several trials of aerial insecticide spraying over large areas have yielded positive results, both in Kenya against Glossina pallidipes, one of the tsetse flies responsible for transmitting trypanosomiasis, and in Ghana against Simulium damnosum, the main vector of onchocerciasis there.

*

The current post-exposure treatment of man for rabies is not always effective; moreover, it involves a number of painful injections and may give rise to untoward side-effects, sometimes paralytic. For some years now WHO has therefore supported studies into the development of more potent and highly purified vaccine that might substantially reduce the number of injections required and obviate the risk of paralytic accidents, making possible a more effective, shorter and safer course of treatment that would be more acceptable to exposed persons. Tests with such a vaccine, of very high antigenicity, have been carried out by the WHO International Reference Centre for Rabies and the Regional Reference Centre for Rabies in the Americas, both in the United States of America, and have shown that a single injection can protect monkeys vaccinated after challenge with a virulent inoculum. If the effect in man should prove similarly good, the future of human rabies prophylaxis and treatment may be radically different from the past.

*

Some progress may also be recorded in the drug field. The pilot research project for international monitoring of adverse reactions to drugs that has been operated by WHO since 1968 at a centre occupying premises and using facilities generously provided under a grant from the Government of the United States of America was successfully concluded and has now entered the primary operational phase, as requested by the Twenty-third World Health Assembly. In this phase, the drug monitoring centre will begin to benefit all countries, and not merely those most directly associated with the programme, as an increasing volume of data accumulates from national drug monitoring centres. From 1 January 1971 the centre will operate from WHO headquarters in Geneva.

The growing interest being shown by governments in drug quality control may be illustrated by two examples from the Western Pacific Region: for the first time a regional seminar, attended by participants from 12 countries and territories, was held on the quality control of pharmaceutical substances; and assistance was afforded to Malaysia for the development of plans to establish a regional training centre for drug inspectors, by which it is hoped to bring about a higher and more homogeneous standard of inspection of pharmaceutical production in the Region.

*

In discussing the year's achievements mention must also be made of the frequently little-known work of the WHO reference centres. Their tasks cover a very wide range—from the maintenance and supply of reference cultures of leptospires to the establishment of internationally agreed criteria for the classification of cancer types, from chromosomal studies on Aedes mosquitos to the standardization of laboratory procedures required in investigations into nutritional anaemias. The work of some, such as the influenza centres, does enjoy general recognition, and justly so; the equally important and deserving contributions of others are not so widely acknowledged as they merit. In the course of the year, they have, to cite but a few random examples, conducted studies on the calibration of radiation dosimeters used in clinical practice in order to ensure safe radiotherapy; performed quality assays of BCG vaccine products from national laboratories and maintained routine quality control of the BCG vaccines supplied for UNICEF/WHO-assisted tuberculosis projects; investigated the possible role of immunoglobulin M in cerebrospinal meningitis; begun worldwide monitoring of urban air pollution; and provided training in techniques for analysing human genetics data. With the designation of 16 new centres in 1970, the WHO network now includes some 200 institutions the world over. They play an inestimable part in ensuring reliability, precision, consistency and comparability in national and international studies of medical and public health problems, in improving medical practice and in furthering vital research.

*

After this brief outline of some of the more encouraging features of the year's work, attention has to be turned to a number of problems of considerable importance to public health; to some of these a more realistic attitude clearly needs to be adopted, nationally and internationally; all demand intensified efforts if the gains of the past are not to be set at naught.

That cholera became for many the public health event of the year is only partly due to the undoubted threat that it represents for populations among whom the El Tor vibrio has appeared for the first time. It is also in large measure due to the widespread fears, some justified and some groundless, that it engenders among the lay public and among certain authorities; to exploitation of the newsworthiness of the situation; and to misunderstanding of or lack of proper information on the danger of the disease. With the invaluable collaboration of a number of Member States, WHO rendered all possible assistance in controlling cholera outbreaks, but it was not possible to determine and inform the world of the precise extent of the year's spread. It was clearly demonstrated that hesitancy in notifying cases of cholera aggravates the problem of control, creating doubt and apprehension and sometimes leading to the adoption

of excessive measures and so to unjustified disturbance of international trade and traffic. This recent spread of the disease has also made plain the need to plan nationally and internationally for the control of future outbreaks, to provide adequate sanitation in order to eliminate the endemic foci of the disease, and—most important of all in the long run—to develop the basic health and laboratory services that are fundamental to the attainment and maintenance of health.

*

In 1969 fears were justifiably expressed that epidemics of yellow fever would recur in West Africa during the rainy season of 1970. It is most gratifying to be able to report that these fears were not realized. Although new cases did occur in the areas where there had been outbreaks in 1969, they were only sporadic. The Organization holds a reserve of vaccine and insecticides for use in emergencies, and a centre was established in Abidjan to collect and disseminate epidemiological information and to assist in the equitable distribution of supplies to areas where the need may be greatest. Arrangements have also been made for emergency aid teams to move quickly into threatened areas upon request from the governments concerned. In accordance with a recommendation of the Twenty-third World Health Assembly, countries in which yellow fever is endemic were asked to set up vaccination programmes and non-endemic countries were asked to make contributions in cash or in kind; unfortunately, few countries—whose response is all the more appreciated—have so far made definite offers of contributions. A very real risk persists, however, and further outbreaks must still be expected.

*

A serious view must be taken of the continued rise in the incidence of venereal infections in many parts of the world, the spread of gonorrhoea in some areas amounting to an epidemic. Surveillance of the antibiotic susceptibility of several hundred circulating gonococcal strains by the WHO International Reference Centre for Gonococci, Copenhagen, indicates that more strains are showing some degree of resistance to penicillin, although they remain susceptible to certain other antibiotics. On the other hand, a retrospective international study co-ordinated by WHO of syphilis treatment over a 25-year period has confirmed the fact that penicillin continues to be effective in this disease. Several countries have also reported continued transmission or localized outbreaks of endemic treponematoses following mass penicillin treatment campaigns. The disquiet that is felt is reflected in the fact that during the year the number of countries assisted by WHO in their control programmes for endemic treponematoses or venereal infections rose by a half—from 18 in 1969 to 27 in 1970.

*

The significance of proper sanitation to health and its importance in the long-term preventive programme of WHO have been sufficiently stressed in the past to need no further emphasis here. Added to this age-old problem are the more recently recognized health hazards brought about by environmental pollution caused by technological development. It will be one of WHO's primary tasks in the Second United Nations Development Decade, starting in 1971, to continue and increase its

efforts for the prevention and control of all forms of pollution, for ensuring the supply of safe, potable water and for the provision of sanitary wastes disposal.

*

An important step towards the eventual control of one form of pollution was made during the year with the entry into action in December of the WHO international network for the monitoring and study of air pollution. This is the outcome of three years' preparatory work and represents the first practical attempt to determine the magnitude of the urban air pollution problem on a global scale. Through the international, regional and national reference centres and collaborating laboratories in many parts of the world that make up the network—including the monitoring stations in the already established Pan American Air Pollution Surveillance Network—information on levels of air pollution caused by sulfur dioxide and particulate matter is centralized from some 30 countries and territories in five of the six WHO Regions. This will make it possible to follow the trends in different lands and to provide advice and assistance based on sound knowledge of the situation. In time, the network is expected to extend to other countries and other pollutants.

In environmental health, as in all other aspects of health, there is a pressing need for well-qualified staff in the developing countries. The Organization's efforts to satisfy this need may be exemplified by two inter-regional training courses that were conducted during the year—on coastal water pollution and on the public health aspects of environmental pollution—and by an inter-regional symposium at which air quality criteria were considered. The Organization also assisted in the establishment of the sanitary engineering centre in Rabat; this provides training at the undergraduate and postgraduate levels for civil and sanitary engineers who will assume key positions in national health and other agencies responsible for environmental health programmes in French-speaking countries.

Much of WHO's work in promoting environmental health is conducted in co-operation with other agencies. For instance, the Organization acted as executing agency for 18 pre-investment projects, on water supply and wastes disposal, financed from the Special Fund component of the United Nations Development Programme, and it assisted jointly with UNICEF in rural water supply programmes in 70 countries and territories.

The adverse effects of environmental influences on health go far beyond the concept of pollution that has dominated public health thinking until very recently. At the request of the Twenty-third World Health Assembly and in preparation for the United Nations Conference on the Human Environment to be held in Stockholm in 1972, the Organization undertook a study to determine how best to exploit its existing resources and facilities to limit those effects and it explored the feasibility of an effective international detection and warning system with respect to factors that modify our environment and affect health. Such a system requires analysis of all these factors—physical, chemical, biological and social—in order to identify indicators that might serve as alarm signals. The development of an adequate environmental monitoring system of course requires full national and international collaboration.

*

Although it has been possible to cite advances in the control of certain parasitic diseases among the year's achievements, it must also be recognized that man is himself creating the conditions under

which some of these diseases may flourish. Economic development schemes, particularly those for the creation of irrigation works or of large artificial lakes, may sooner or later bring about ecological changes that entail the risk of spreading water-related parasitic diseases. The Organization is therefore studying what research is most urgently needed for the prevention and control of these diseases in man-made situations, especially in relation to schistosomiasis, and it has dealt with a large number of requests for advice on the health aspects of development projects.

*

Another problem that is causing growing concern and that is in some degree associated with economic development is the steadily increasing incidence of a number of zoonotic and food-borne infections observed in certain countries. Part of this rise may be considered to reflect improved detection and surveillance methods. But in many instances the rise is undoubtedly a real one, linked with an increase in animal production and with changes—which from the health standpoint cannot always be considered improvements—in animal husbandry and agricultural practices. Much field and research work jointly conducted by FAO and WHO is therefore directed to the solution of many of the problems to which this situation gives rise.

There has also been intensified collaboration with FAO in connexion with the safe use of pesticides in agriculture. Surveys have been carried out on the use of pesticides in a number of countries and advice has been given on many aspects of this serious public health problem. The use of pesticides in projects financed from the Special Fund component of the United Nations Development Programme raises questions that are recognized as being the joint responsibility of FAO and WHO; working together, the two organizations are seeking to establish, in as many countries as possible, a scientific body that would advise public health administrations and agricultural departments on the characteristics of pesticides, their methods of application, the dangers associated with their use, and the avoidance or the recognition and treatment of pesticide poisoning. The toxicology of newly developed pesticides is under constant study as part of the WHO scheme for the evaluation of these compounds; in addition, investigations are being pursued into the long-term effects of certain pesticides, notably DDT, on spraymen engaged in malaria eradication activities.

*

Despite the concerted efforts that have been made in recent years by various governments and by organizations within the United Nations system, the nutritional situation in many countries remains far from satisfactory. Although the mortality rates among young children have been substantially reduced in many developing countries and there is evidence of a decline of some severe forms of protein-calorie malnutrition, the problem is still one of great concern.

During the year a number of new protein-rich weaning foods were tested by WHO for their nutritive value and acceptability with satisfactory results, and marketing tests are planned for them before they are put into commercial production. Special mention should be made of the meetings of the FAO/UNICEF/WHO Protein Advisory Group and of two ad hoc working groups under its sponsorship; one

of the latter made recommendations regarding the manufacture and safety of single-cell proteins and the other regarding feeding of the pre-school child.

*

Over the years repeated reference has been made to the grave lack of health manpower, especially in the developing countries, which tragically retards world progress towards better health. The problem is not one that admits of any quick or easy solution but every effort has been and must continue to be made to remedy this critical shortage. It is not necessary to detail here the innumerable examples of the Organization's assistance or technical guidance in this field during the year; WHO's preoccupation with finding practical and economic ways to develop adequate health services despite worldwide limitations of both trained persons and financial resources emerges from every page of this report. Certain activities, however, should perhaps be highlighted.

The year 1970 was designated International Education Year by the United Nations General Assembly. Within the framework suggested by UNESCO of "stock-taking, discussion and action at country level", WHO carried out surveys of existing educational and manpower needs and arranged several meetings at which matters related to the education and training of health personnel were studied. The Technical Discussions at the Twenty-third World Health Assembly, on the subject of "Education for the health professions—regional aspects of a universal problem", provided an opportunity for consideration of a large amount of background material made available by various countries on the basis of their national experience. The participants at these discussions reached the unanimous conclusion that to secure the best possible services for all segments of the population—urban and rural, developed and developing—it is not enough to rely solely on the highly trained physician; he must be ready to assume the leadership of a team of health workers at all levels in order to ensure both quality and efficiency of service.

The increasing financial support provided by the Special Fund component of the United Nations Development Programme for the creation of institutions to train health personnel is encouraging for future WHO action in this field. An instance of this co-operation with the United Nations Development Programme for the provision of health manpower is the completion of the first year of studies at the University Centre for Health Sciences in Yaoundé, Cameroon. It is to be hoped that the development of this institution, which represents an innovative approach to the multiprofessional teaching of health workers, will be followed by the establishment of similar centres in other parts of the world. Indeed, a start has already been made in the Eastern Mediterranean Region, where a UNDP/WHO mission visited Syria to advise on the establishment of a community-oriented faculty of medicine similar in function to the Yaoundé centre. The joint approach is also being extended to the training of yet other members of the health team with the initiation during the year of projects both in the People's Democratic Republic of Yemen and in Yemen for assistance in developing institutes of health manpower.

Valuable recommendations on research and future activities in health manpower planning were made by a scientific group that was convened to review selected studies of health manpower from the point of view both of the methodologies applied and of their utilization in relation to national health programmes.

*

Parallel with the development of health manpower, there must be research into the design of systems that can help developing countries in deciding how best to use the often limited resources available to them. A first stage in research into the operational aspects of health planning was reached during the year with the initiation of a project jointly undertaken by the Government of Colombia, the Pan American Health Organization and WHO to analyse the elements that affect decision-making and planning in health matters within one province of Colombia and to indicate how the delivery of health services could be improved. If the criteria and techniques evolved in this project are validated they should be applicable, with appropriate modification, first at the national level in Colombia and later in other countries.

*

Important modifications made during the year to two major WHO programmes should help to rationalize and increase the impact of health services.

The first of these is connected with the reference in the annual report for the year 1969 to the necessity for family planning projects to be carried out within the framework of the general health services. During 1970 this concept was embodied in a broader approach that is based upon recognition that problems of maternal and child health, of human reproduction and of human genetics—and these include the question of family planning—are all closely related aspects of the greater problem of the health of the whole family, seen as a single and fundamental social unit. Accordingly, family health is being viewed as a matter deserving high priority among the tasks of national public health services.

Expansion of WHO's programme in the fields of human reproduction, family planning and population dynamics during the year was made possible in large measure by financial aid received from the United Nations Fund for Population Activities and the Swedish International Development Authority. Assistance to an increasing number of Member States was given for the promotion of family health and the integration of services for family planning care into the general health system, particularly its maternal and child health components.

The need for adequately trained personnel to operate all segments of family health services, and especially the maternal and child health services and family planning, is acutely felt in all Regions. To help countries to plan and establish training programmes for all categories of personnel working in national family planning programmes, WHO intensified its assistance in curriculum design, teaching methods, in-service training, and the development of a core of trainers.

The second programme modification is based upon the tenet—a truism to some, but insufficiently heeded in practice—that the national public health services, whether they are directed to the promotion of family health or to that of any other aspect of health, will best fulfil their functions if they are properly co-ordinated and based on realistic planning that takes account of the available financial and manpower resources as well as of the prevailing health situation. A reorganized programme grouping the components of national health planning, organization of medical care and public health administration has therefore been started in an attempt to ensure the provision of comprehensive community health services encompassing the full range of health promotion and of prevention, cure and rehabilitation.

*

A problem that is hardly of recent origin but to which Regional Committees have increasingly drawn attention in view of its effect on the development of health services is the tendency among administrators of public services to underestimate national health needs when allocating public funds; economists and other officials do not always fully appreciate the considerable economic gains that can result from the application of existing means for the control or prevention of disease. It is therefore particularly encouraging to note a contrary tendency prevailing in some countries which are allotting funds for health under bilateral aid agreements with developing countries and are using the good offices of WHO in the preparation or conduct of the work. Two recent examples may be cited: the Organization is to act as the executing agency for a water supply project in Kenya that is financed under a bilateral aid agreement with the Government of Sweden; similarly, WHO was requested by the Governments of Guatemala and Switzerland to act for them in arranging a collaborative project that they are undertaking jointly to provide postgraduate training for Central American nationals in water supply and treatment and water pollution control; WHO will also assist in administering the project.

*

The year 1970 marks the twenty-fifth anniversary of the United Nations and it is fitting to pay tribute here to the outstanding part it has played on the world stage over the past quarter of a century and to express confidence in a future in which it will ever increasingly contribute to the progress of mankind. The years since the foundation of the United Nations have been marked by constantly closer co-ordination and collaboration between the various members of the United Nations system and particularly by the widening recognition both that positive health is an essential element of the socio-economic development of any country and, conversely, that this very development can and should make for better health. It is the duty of the World Health Organization to ensure that health is integrally associated with other factors of development and that these do not have consequences harmful to health. On the eve of the Second United Nations Development Decade I wish to reiterate our oft-stated concern to ensure, through continued and even greater co-operation with the governments of developing and developed countries as well as with other international organizations, that WHO play its full part in helping all Member States to attain to a higher level of health in pursuit of "a more just and rational world economic and social order", to quote the words of the International Development Strategy for the Decade.

*

In the foregoing, allusion has been made to areas in which progress has been achieved or in which there is good promise of progress, and attention has been drawn to some of the problems that continue to cause concern. As will be apparent from the pages that follow, neither list is exhaustive. If the casual reader may perhaps be excused for feeling that the negative side weighs rather heavier in the balance than the positive, I am confident that many who have closely followed the progress of health over the years will think otherwise.

It is immediately and depressingly obvious to all when health problems outstrip their remedies; when the trained manpower is lacking to ensure or restore health; when children, or their parents, are

inadequately or wrongly fed; when the population increases at an alarming rate; or when our very environment appears no longer to sustain and to comfort but rather to threaten. These are, indeed, grave and urgent problems. Let it not be thought, however, that, because they are not solved within a year or a decade, they are insuperable. The fight against disease, and against those fundamental conditions that lead to disease, is slow and seldom spectacular. A gradual and general improvement in the level of health of a community or a nation is more likely to be apparent from the statistical yearbooks of the demographer and, ultimately, of the economist than to be perceived by those who most directly benefit.

A handwritten signature in black ink, appearing to read 'M. G. Candau'. The signature is fluid and cursive, with a large, stylized 'M' and 'G'.

Director-General

PART I

GENERAL REVIEW

CHAPTER 1

COMMUNICABLE DISEASES

The Organization's communicable diseases programme has been concerned increasingly with the strengthening of national epidemiological services and of epidemiological surveillance, especially in relation to cholera, smallpox and yellow fever. More training was given in surveillance methodology and in the control and prevention of communicable diseases.

During 1970 the programme for the provision of emergency aid in epidemics was further developed. This programme enables the Organization to act immediately in response to requests from Member States for assistance in outbreaks of internationally important communicable diseases by sending experts to advise on diagnosis, treatment, control and prevention, as well as by providing vaccines and other emergency supplies. The programme also provides for similar action in the case of disasters, such as floods and earthquakes. This type of assistance was provided on a large scale and proved its value during the westward spread of cholera in the African, European and Eastern Mediterranean Regions during 1970 (see page 5).

A further WHO Serum Reference Bank was created during 1970 at the National Institute of Health in Tokyo to undertake for the South-East Asia and Western Pacific Regions work similar to that performed by the existing serum reference banks in Prague and at Yale University.

WHO continued to support research and to assist countries in the control and prevention of specific communicable diseases. This work is described under the relevant headings of this and the following chapter and also in the six chapters of Part II dealing with the Regions.

Epidemiological Surveillance and Quarantine

The epidemiological surveillance programme of WHO was originally designed largely to collect, analyse, evaluate and disseminate to the Member States of WHO worldwide information on six quarantinable diseases—plague, cholera, yellow fever, smallpox, louse-borne typhus and relapsing fever. These came under the provisions of the International Sanitary Regulations (1951). The programme was gradually extended to cover other diseases of major international importance and, at the same time, the connotation of

the term "international surveillance" was broadened to include not only the collection of data routinely submitted by health administrations and the like, but also the active seeking of epidemiological information through serological surveys, for instance, and the establishment of serum reference banks.

A further change in the programme was necessitated in 1970 by the forthcoming replacement, on 1 January 1971, of the International Sanitary Regulations (1951) by the new International Health Regulations (1969), to which only cholera, plague, yellow fever and smallpox will henceforth be subject. However, typhus, relapsing fever, influenza, paralytic poliomyelitis and malaria also come within the programme, as was confirmed by resolutions WHA22.47 and WHA22.48 adopted by the Twenty-second World Health Assembly in 1969; a further integral part of the overall surveillance programme of WHO is the *Salmonella* surveillance programme that was initiated in the European Region in 1967.

Information on all the above-mentioned diseases was disseminated regularly through the daily WHO epidemiological radiotelegraphic bulletin and in the *Weekly Epidemiological Record*, which also contained epidemiological notes on a number of other diseases of international importance and reports on the importation of cases—often fatal—of diseases into countries unfamiliar with them; these imported cases are assuming increasing importance as the volume of international travel constantly grows.

Among the diseases under surveillance, *cholera* was the one that caused most concern in the public mind during the year. Although the overall incidence in Asia remained at much the same level as in 1969, except for large outbreaks in Indonesia and the Republic of Korea, there were a series of outbreaks caused by the El Tor biotype of *Vibrio cholerae* in areas in which cholera is not normally endemic (see page 5). Appearing first in the eastern part of the Mediterranean basin, it then spread to northern, eastern and western Africa, affecting countries where it had not been known this century. In Europe, apart from Turkey and the Union of Soviet Socialist Republics which reported some 1100 and 700 cases respectively, only isolated or imported cases occurred—in Czechoslovakia, France and the United Kingdom.

Most of the outbreaks were rather limited although a few were on a more important scale, but it is difficult to prevent the spread of cholera by such measures as vaccination, and the Organization is therefore encouraging, *inter alia*, the establishment of national programmes for the surveillance of diarrhoeal diseases so that cholera, among them, can be identified immediately it appears and steps can be taken to contain it and prevent major outbreaks. However, it is of the utmost importance, both for a country's own national health protection and in order to allow other countries the opportunity to strengthen their preventive and treatment services on the basis of accurate global information, that all cases of cholera be notified promptly. In some instances during the year the Organization experienced difficulties in obtaining notification of the disease from countries despite their obligations under the International Sanitary Regulations, and it was therefore unable to fulfil its own obligation to keep Member States informed of the epidemiological situation. There were also instances of excessive quarantine measures, and unjustified vaccination requirements caused some problems in international travel.

In December, the Committee on International Surveillance of Communicable Diseases (formerly the Committee on International Quarantine) reviewed the position with regard to cholera and stressed that, since it was not unlikely that the disease would continue to spread in the near future, there was an urgent need to ensure that governments were properly informed about cholera in order to minimize the temptation to resort to irrational or ineffective measures.

With regard to *smallpox*, the data from the surveillance programme showed that there was again a decrease in the number of cases reported to the Organization, even though reporting was, in general, more complete. About 30 000 cases were reported from 23 countries in 1970, as compared with 54 000 from 30 countries in 1969. Smallpox was introduced into the Federal Republic of Germany in January 1970 by a German citizen returning from Pakistan and an outbreak involving 18 cases with four deaths occurred in the hospital in which he was isolated. One further case occurred in a neighbouring community (involving a visitor to the hospital), but no secondary cases. Investigation of the outbreak provided evidence very strongly suggesting airborne transmission of the disease.

The worldwide *malaria* situation, reported on fully on page 28, showed no deterioration during the year. Two reports, one semestrial and one annual, on the epidemiological status of malaria eradication were

issued in the *Weekly Epidemiological Record*,¹ which also published accounts of cases imported into malaria-free countries.

Human *plague* was reported in 1970 by nine countries—the same number as in 1969. The number of cases in Africa and the Americas was much lower than in 1969, although the world total of suspected and confirmed cases was considerably higher and many cases were reported from the Republic of Viet-Nam. An imported case was notified from France.

Yellow fever was again reported in Africa, but not to the same extent as in 1969. Cases occurred in Ghana, Nigeria and Togo, and for the first time in many years the disease was reported from Cameroon. In South America only three countries (Bolivia, Colombia and Peru) reported cases of jungle yellow fever, but the total was considerably higher than in 1969, owing to 75 cases reported from Peru.

Louse-borne *typhus* again constituted a serious problem only in Burundi and Ethiopia, although the disease was also reported from seven other countries. The reported incidence in both Burundi (some 6000 cases and 40 deaths) and Ethiopia (1300 cases and two deaths) was much lower in 1970 than in 1969. An imported case was notified in Sweden, but there were no secondary cases. Louse-borne *relapsing fever* was reported from the same three countries as in 1969 (the Democratic Republic of the Congo, Ethiopia and Sudan), but the total number of cases continued to decrease.

For *influenza* surveillance it is essential to be able to identify the antigenic properties of the prevalent virus types as soon as they appear so that the appropriate vaccines can be produced as rapidly as possible. The Organization therefore continued to support surveillance to this end in its virus reference centres and in other collaborating laboratories, and kept health authorities and the reference centres informed of the situation throughout the world. In addition, plans were prepared to encourage the more widespread use of indices such as excess mortality from respiratory diseases in major urban areas and absenteeism in industry and educational institutions in order to improve the epidemiological information on the severity and extent of influenza epidemics.

With regard to *paralytic poliomyelitis*, WHO planned a surveillance project whereby regular weekly or monthly reports received from developing countries experiencing outbreaks of paralytic cases will be examined by the Organization in order to detect any unusual changes; the information will then be disseminated in the speediest possible manner in conformity with the request of the Twenty-second World Health

¹ *Wkly epidem. Rec.*, 1970, 45, 53-64, 429-445.

Assembly in resolution WHA22.47. Planning was also started for another project for the evaluation of surveillance methodology for the two distinct epidemiological patterns existing in the European Region: on the one hand, a large number of countries have either eradicated or controlled poliomyelitis, and surveillance is necessary only to detect reintroduction of the virus or waning immunity in the population; on the other, some countries still experience a considerable number of cases of paralytic poliomyelitis each year.

The *Salmonella* surveillance programme¹ in Europe was broadened in scope to include other food-borne infections and *Shigella*, and steps were taken to secure the co-operation of major laboratories in other WHO Regions. The Organization also contacted a number of countries to explore the possibilities of obtaining more detailed epidemiological information in addition to the data provided by the collaborating laboratories. With the co-operation of the Institut Pasteur in Paris, a research project was started on the patterns of resistance to antibiotics of Enterobacteriaceae isolated in Europe. In addition to the value of information on these patterns for determining appropriate therapy, resistance characteristics may serve as epidemiological markers to indicate routes of spread of infection.

Serological surveys, providing immunological information that can serve as a basis for the planning and evaluation of vaccination campaigns and other control projects, play an important part in the surveillance programme. The WHO Scientific Group on Multipurpose Serological Surveys and WHO Serum Reference Banks that met in November 1969 considered a number of methods for immunological, haematological and genetic studies, and its report²—which was reviewed by the Advisory Committee on Medical Research at its meeting in June 1970—should help to facilitate the standardization of the techniques used in these fields.

A substantial part of the laboratory investigations required for multipurpose surveys can be carried out by serum reference banks, located in large research or educational institutions that are actively involved in immunological surveys. The collections of sera in various research institutions throughout the world have increased considerably since the establishment of the WHO serum reference banks in 1961; another bank was established during 1970, at the National Institute of Health in Tokyo—to assist, in particular,

with the growing number of serological investigations in the South-East Asia and Western Pacific Regions.

In accordance with resolution WHA22.47 of the Twenty-second World Health Assembly, the draft of a technical manual on the surveillance of selected communicable diseases was prepared. This manual is intended primarily for public health administrators and epidemiologists. It outlines general principles for epidemiological surveillance for the nine diseases subject to international surveillance.

This manual was submitted for comment to the Committee on International Surveillance of Communicable Diseases at its meeting in December, when it reviewed the functioning of the International Sanitary Regulations (1951) for the period 1 July 1968 to 30 June 1970 and the positions of Member States regarding the new International Health Regulations (1969) that will enter into force in 1971. The Committee also considered the cholera situation in the world, as noted above, and the questions of contra-indications to smallpox and cholera vaccination, vector control in ports and airports and the disinsection of aircraft, and the potential hazards that might arise from the increasing use of containers in international freight traffic.

Bacterial Diseases

The westward spread of cholera, notably in the African, European and Eastern Mediterranean Regions, gave rise to considerable anxiety during the year, and the Organization's work in bacterial diseases accordingly concentrated on this problem. At the same time, research activities not only in cholera, but also in enteric infections, plague, cerebrospinal meningitis and other infections continued, 30 projects being planned and supported in 13 countries.

Cholera

Cholera was more widespread during 1970 than in any year since the start of the seventh pandemic in 1961, appearing in some countries of North, East and West Africa for the first time this century; southwards on that continent, it spread nearly to the equator, and it affected countries along both banks of the River Niger. The situation created a number of problems for various national health administrations and also for the Organization. Incomplete reporting by some countries made it difficult for WHO to fulfil its duty of assisting in combating the disease.

As far as could be ascertained from official reports from governments, cholera was present with varying degrees of severity in Brunei, Burma, Dahomey,

¹ Data obtained in the *Salmonella* surveillance programme were published in the *Weekly Epidemiological Record (Wkly epidem. Rec.)*, 1970, 45, 64, 105-109, 119, 238, 312, 320, 325-326, 346, 357-359, 473, 474, 510-513, 541-544, 570).

² *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 454.

Ethiopia, the French Territory of the Afars and the Issas, Ghana, Guinea, India, Indonesia, Israel, Ivory Coast, Lebanon, Liberia, Libya, Malaysia, Mali, Nepal, Niger, Nigeria, Pakistan (East), the Philippines, the Republic of Korea, the Republic of Viet-Nam, Saudi Arabia, Sierra Leone, Somalia, Syria, Togo, the Trucial Sheikdoms, Tunisia, Turkey and the Union of Soviet Socialist Republics (Astrakhan, Odessa and Kerch). Isolated or imported cases were reported from Czechoslovakia, France, Japan, Jordan, Kuwait, the United Kingdom and Upper Volta. Reports of outbreaks in several other countries were not confirmed by the governments concerned, and it is thought that the unnotified presence of cholera in these countries may have contributed significantly to its spread in the latter part of the year. The governments of some countries, however, co-operated fully with the Organization, asking it to help them in their preparations against the disease and in surveys to ascertain the presence or absence of cholera infection in their territories.

The Organization provided emergency assistance to several countries in the South-East Asia Region and to a number of others in the African, European and Eastern Mediterranean Regions, giving expert advice and supplying rehydrating fluid, antibiotics, vaccine, vaccination equipment, disinfectants, diagnostic media and sera (see page 114). Emergency cholera teams visited 21 countries. Needs were assessed on the basis of the epidemiological situation in each country so that the best use could be made of the limited resources available. In response to an appeal from the Organization, a number of countries donated cholera vaccines and vaccination equipment and made experts available to the Organization at short notice.

Every attempt was made to allay public anxiety by means of the press and other information media, and technical documents providing up-to-date knowledge on cholera were widely distributed.

Despite the remarkable advances in knowledge of cholera during the past decade, much of the most recent information on the disease has been available only from scattered sources. WHO has therefore published a compilation of such information in its *Public Health Papers* series.¹ For quick and easy reference, this publication contains a supplement giving a concise review of the subject and outlining practical measures for cholera control. This review is intended especially for use in areas where cholera has been unknown for many years and where its appearance would confront the health authorities with unfamiliar problems.

¹ *Principles and practice of cholera control*, by various authors (1970), Geneva, World Health Organization (*Public Health Papers*, No. 40).

Two training courses—one in English in Ibadan, Nigeria, and one in French in Bobo-Dioulasso, Upper Volta—were organized as soon as possible after it became known that the disease had broken out in West Africa. Seventy participants from 25 countries or territories in Africa were trained in the bacteriological, epidemiological and clinical aspects of cholera and in its treatment.

Though simple and relatively inexpensive, the treatment of cholera always creates logistic problems. The transport of large volumes of rehydration fluid from far-distant countries is sometimes more costly than the actual supplies; the Organization is therefore assisting in producing rehydrating fluid and vaccine in laboratories in Africa.

Long-term plans for assisting the countries of the African and Eastern Mediterranean Regions in combating cholera were also developed; priority was given to training medical and allied personnel to deal with the disease, as many of them are unfamiliar with it, and support was also given to programmes for improving environmental sanitation and personal hygiene.

Research projects on immunity against cholera were supported in various laboratories in India, Indonesia, Japan, the Philippines and the United States of America. The immunological control of the disease will continue to be important until sanitary improvements are made in all cholera-affected areas. Studies on improvements in treatment, particularly of cholera in children, were also encouraged and supported, since lowering the case-fatality rate to a negligible level might help to allay panic and produce a change of attitude towards the disease. Reports to WHO suggest a case-fatality rate of more than 15.5 per cent. in 1970, whereas with appropriate and timely treatment it should not be more than 1 per cent. to 3 per cent.

Members of the inter-regional cholera control team continued to work in collaboration with the Indian Council of Medical Research and the staff of the Government of West Bengal at the Cholera Research Centre, Calcutta, India, and to take part in the joint Philippines/Japan/WHO cholera research projects in the Philippines. This team visited 10 countries during the year to assist in cholera control.

New techniques were developed in Calcutta for describing the functions of different classes of immunoglobulins in the intestinal contents in order to elucidate the mechanism of gut-associated immunity, and they are now being applied in a collaborative study of the protective effect of live and killed oral vaccines. In the Philippines, field trials were started with a monovalent parenteral cholera vaccine. Preliminary results

show that this vaccine affords approximately 75 per cent. protection against infection by the homologous serotype; there is also evidence suggesting a high degree of protection against infection caused by a heterologous serotype.

A number of WHO-supported studies on cholera were carried out in the United States of America during the year. Strains of *Vibrio cholerae* dependent on streptomycin for growth were investigated as live immunizing agents in chimpanzees, and a model was developed for assaying various new types of immunizing agents before undertaking fields trials that might prove unduly costly and elaborate. New techniques were developed for the preparation and purification of cholera toxin free from bacterial antigen. Laboratory studies on the development of a toxoid type of immunizing agent against cholera are under way but there are still many problems to be solved.

Epidemiological studies in the Philippines to evaluate the effect of certain sanitary measures in the control of cholera in endemic foci indicated that even slight improvements, requiring only very modest investment, in the disposal of faecal matter and/or water supply may produce a marked reduction in *V. cholerae* transmission in a community. Also in the Philippines, chloramphenicol was found, like tetracycline, to be effective in reducing the carrier rate among family contacts of cholera cases.

In view of the appearance of antibiotic-resistant strains of *V. cholerae* in the Philippines, a search for alternative drugs was started; furazolidone was found to be very satisfactory from the standpoints of effectiveness and cost. The value of oral rehydration maintenance therapy after initial parenteral treatment of cholera in adults was confirmed in a clinical study, although it proved difficult to apply on a large scale. Studies are continuing to improve the method and render the oral fluid suitable for the treatment of adults and children.

A travelling inter-regional training course on cholera control was held in India, Thailand, Hong Kong and the Philippines in April and May. These annual courses are organized for the dissemination of technical information and the training of public health workers from countries affected or threatened by the disease.

An inter-regional seminar on the organization of cholera control programmes was held in Manila in October for senior administrators responsible for public health policies. The discussion centred on ways of making better use of the resources available for cholera control programmes in the countries concerned and on the principles of planning cholera control on the basis of cost-benefit analyses. Emphasis was laid on long-term planning for cholera control through improved sanitation, which is more effective

than immunization, as shown by the epidemiological studies in the Philippines mentioned above.

Plague

There was no extensive outbreak of plague during 1970. The Republic of Viet-Nam, however, again reported a large number of cases, although the case-fatality rate was low considering conditions in the country. The geographical distribution of plague in the world remained more or less as it was during the past few years.

In Burma, the Democratic Republic of the Congo and Indonesia, national public health workers investigating plague in man and animals were advised on ways of improving their laboratory services and surveillance programmes.

A WHO International Reference Centre for Plague was established at the Central Asian Institute for Research on Plague Control, Alma-Ata, USSR.

A collaborative laboratory study on the protective effect of killed and live plague vaccine on non-human primates was started with the Haffkine Institute, Bombay, India, and the George Williams Hooper Foundation, San Francisco, Calif., USA.

In May and June, an inter-regional travelling seminar on plague control for French-speaking health workers was held in the USSR and Iran.

Enteric Infections

Oral live dysentery vaccine prepared from streptomycin-dependent *Shigella* was studied in primates and shown to be effective when given in three doses together with streptomycin.¹

Field and laboratory studies in support of the *Salmonella* surveillance programme in Europe and North America were continued (see also page 5). Further efforts were made to extend this programme to Asia and Africa. A study of *Shigella* resistance to drugs in Asia was started in co-operation with Japanese research workers.

Typhoid fever is declining in developed countries but widespread in other parts of the world, and infections have frequently been reported among tourists returning from developing countries.

A mathematical model developed by WHO to evaluate the cost-effectiveness and cost-benefit of strategies and programmes for typhoid control was applied in Western Samoa in preparation for a national control programme.

Streptomycin-dependent *Salmonella typhi*, which has been used successfully as a live typhoid vaccine in primates,² is being further investigated in volunteers in the United States of America.

¹ *Bull. Wld Hlth Org.*, 1970, **43**, 431-437.

² *Bull. Wld Hlth Org.*, 1970, **42**, 499-507.

Studies of an oral killed antityphoid vaccine in India and the United States of America suggested that, with further improvements, it may be made effective.

Diphtheria, Pertussis and Tetanus

Further work on the testing and improvement of vaccines against diphtheria, pertussis and tetanus was carried out during the year, and the Organization continued to supply these vaccines to various field projects.

The Third World Conference on Tetanus, held at São Paulo, Brazil, in August, stressed the importance of immunization against the disease, especially in pregnancy. WHO has prepared a cost-benefit and cost-effectiveness study bringing out the economic advantages of certain types of tetanus vaccination programmes for developing countries.

A programme was drawn up for a co-operative international study of pertussis vaccine to be organized by WHO. The aim is to investigate the reasons for recent failures with this vaccine in some parts of the world and to stimulate further research on the subject.

Meningococcal Meningitis

Cerebrospinal meningitis continued to be a serious problem in Africa. An epidemic, with some 7000 cases and a case-fatality rate of about 10 per cent., occurred in Niger in the first part of the year, the causative organism being *Neisseria meningitidis* group A, which showed increased resistance to sulfonamides. Smaller outbreaks occurred in Northern Nigeria and Upper Volta. In Mali, where there had been a large outbreak in 1969, cases were relatively few in 1970. The Organization assisted Mali, Niger, Nigeria and Upper Volta in epidemiological investigations and control operations; sulfonamides and chloramphenicol were provided to Niger, and the WHO stores of these drugs in Niamey and Brazzaville were replenished.

A new type of experimental polysaccharide vaccine against group A meningococcus was produced jointly by the Institut Mérieux, Lyons, France, and the Rockefeller University, New York, N.Y., USA, with WHO support. In tests on a group of volunteers in Senegal, reactions to the vaccine were mild and the antibody response was satisfactory.

The WHO International Reference Centre for Immunoglobulins in Lausanne, Switzerland, completed a study with the aim of ascertaining the possible role of IgM in cerebrospinal meningitis and began analysis of the results.

A study of the part played by environmental factors, especially housing, in the transmission of the disease was carried out in Upper Volta and Mali, and the Organization assisted the latter country in establishing a cerebrospinal meningitis laboratory in Bamako. Other studies in Mali demonstrated that

N. meningitidis belonging to groups other than group A are present there in interepidemic periods.

Streptococcal and Staphylococcal Infections

The WHO International Reference Centre for Streptococcus Typing, Prague, provided reagents to a number of countries in Africa and Asia and helped in the preparation of a programme of co-operative international studies of streptococcal infections and their sequelae (rheumatic heart disease and acute glomerulonephritis) in tropical and temperate zones.

The WHO International Reference Centre for Staphylococcal Phage-Typing, London, together with the WHO International Reference Centre for Streptococcus Typing, took part in an international co-operative study of nosocomial infections, which was discussed at a meeting in August in Atlanta, Ga., USA. The Centre distributed reagents and sera to national laboratories and assisted in the typing of staphylococci.

Tuberculosis

An essential element of WHO's programme for tuberculosis control is to bring the most recent developments and techniques to the knowledge of the persons who are ultimately responsible for their application. During 1970, for the ninth consecutive year inter-regional courses in the epidemiology and control of tuberculosis were held in Prague and Rome (in English and French respectively) for the key organizers of national tuberculosis programmes—especially those in developing countries. The purpose of these courses is to acquaint tuberculosis workers with modern concepts and methods of tuberculosis control and with the most effective means of applying them in the different epidemiological and socio-economic conditions that prevail in the developing countries. Particular emphasis is laid on the managerial techniques that are required for the close and continual supervision essential to any successful control programme but that are all too often unfamiliar to the medically trained. Both these courses were rounded off by several weeks of practical field training; as in the past, the participants in the Prague course visited the Indian tuberculosis programme; for the participants in the Rome course it was possible for the first time to arrange a field-study programme in Turkey.

Similar courses, but on a regional scale, were provided for the second year for the Region of the Americas, at Caracas from September to November, and for the fifth successive year for the Western Pacific Region, at Tokyo from May to October. Trainees from other WHO Regions also attended the latter course.

A number of regional seminars and meetings on tuberculosis control and on the evaluation of control

programmes were also held—in Ceylon and Yugoslavia, for instance, and at the Regional Office for Europe. These have proved to be an important means of helping both developing and developed countries to formulate realistic national tuberculosis control programmes in consonance with the structure of the health and medical services peculiar to each country and with its forward health planning.

In these and in other forms of WHO assistance to national tuberculosis control programmes emphasis is placed on the necessity of integrating the programme into the existing (and developing) general health services. Although in many parts of the world only modest success has been achieved in the application of this principle, a number of countries—among them Afghanistan, Burma, Ceylon, Ethiopia, India, Malaysia, Pakistan and Venezuela—have made determined efforts to integrate their tuberculosis control activities and the first benefits of this policy have become apparent. In Ceylon, for instance, more than 90 per cent. of patients now take their medication regularly in the integrated ambulatory treatment programme, which entails a supervised, intermittent (twice-weekly) regimen of streptomycin and high-dosage isoniazid. Details of the Malaysia programme are to be found on page 169.

The introduction of direct BCG vaccination (without previous tuberculin testing) has not only led to a substantial increase in numbers of persons vaccinated (as in Burma, where it has been possible to double the annual vaccination figure) but has also facilitated combined immunization schemes. Thus, campaigns for simultaneous BCG and smallpox vaccination were conducted in 29 countries in all WHO Regions in 1970.

The WHO International Reference Centre for BCG Seed-lots and Control of BCG Products, at the Statens Seruminstitut, Copenhagen, which collaborates closely with institutions in Budapest, Moscow and Prague, undertook quality assays of vaccine products from national laboratories and institutes in Argentina, Canada, Hungary, India and Senegal. On behalf of the Organization, this centre also maintained a routine quality control on the BCG vaccines purchased by UNICEF for supply to WHO/UNICEF-assisted projects throughout the world and, with the help of a contribution from the Danish Government to the Voluntary Fund for Health Promotion, provided training or consultation for BCG production experts from France, India, Senegal and Turkey.

During the year WHO played a central role in obtaining from the producing laboratories biological substances that are required for research and laboratory tests (e.g., mycobacterial antigens, mycobacteriophages and immune sera) and making them

available to individual investigators or WHO tuberculosis reference centres in 28 countries.

Research

A sample of the tuberculosis research sponsored or assisted by the Organization, and of the applications of the results of that research, may be seen in the special tuberculosis issue of the *Bulletin* published in 1970; many of the instances that follow are reported more fully therein.

The cost and complexity of large-scale tuberculosis prevention trials could be considerably reduced if there were a standard system of *in vivo* and *in vitro* laboratory tests that would reliably predict the effectiveness of a given vaccine in man. WHO is accordingly sponsoring collaborative research on experimental methods for the assay of BCG vaccines, and the WHO International Reference Centre for BCG Seed-lots and Control of BCG Products has reported¹ the results of studies on the *in vivo* properties of a number of widely used BCG strains; the multiplication of the bacilli and their protective effect in bank voles (*Clethrionomys glareolus*) or lethal effect in hamsters were used for the characterization and ranking of those strains.

An operational study was carried out as part of the preliminary investigations for the WHO-assisted tuberculosis prevention trial in South India, which now covers some 420 000 persons. The results² can be expected to be of interest also in relation to other health schemes in which self-administration of drugs plays an important role—e.g., in family planning. It was confirmed that, when supplies of pills for daily self-medication are issued weekly, little reliance can be placed on estimates of the amount of drug consumed that are based on “pill-counting” or on house-to-house interviews. Even though direct daily administration of pills to each participant by a locally employed person resulted in a much higher consumption of isoniazid, there was still some incorrect recording.

The results of another controlled study³ conducted within the tuberculosis prevention trial are of considerable practical importance in relation to the protection of tuberculin-negative contacts, for they show that, despite the fact that BCG is sensitive to isoniazid, primary chemoprophylaxis with that drug can be successfully combined with simultaneous BCG vaccination.

The National Tuberculosis Institute in Bangalore, India, which is also supported by WHO, reported on

¹ *Bull. Wld Hlth Org.*, 1970, **43**, 65-70, 71-90.

² *Bull. Wld Hlth Org.*, 1970, **43**, 41-52.

³ *Bull. Wld Hlth Org.*, 1970, **43**, 53-64.

two studies¹ of the extent to which urban tuberculosis patients in South India are reached by the appropriate treatment facilities. One socio-epidemiological study of the role of specialized centres in tuberculosis control programmes reveals a number of obstacles that reduce the likelihood of the patient's seeking the services of the clinic and indicates that it would be unrealistic to postulate a pivotal role for specialized centres in such programmes solely on the ground that people prefer them to other health institutions. This is borne out by the second study which shows that a very substantial proportion of urban tuberculosis cases is detected among outpatients at general dispensaries. These studies emphasize the importance of ensuring that all the general health services and dispensaries in a city participate in tuberculosis case-finding and treatment programmes, as has already been postulated for rural areas.

In co-operation with the Medical Research Council in London, WHO continued to provide assistance for controlled tuberculosis chemotherapy trials in Czechoslovakia and India. In Czechoslovakia, the data from a first investigation of the minimum and the optimum durations of an initial intensive treatment period involving different intermittent regimens are now being statistically processed and the intake for a second co-operative study has begun. In India, a study by the Tuberculosis Chemotherapy Centre, Madras, has already demonstrated the value of a fully supervised twice-weekly regimen of high-dosage isoniazid plus streptomycin for the treatment of newly diagnosed tuberculosis patients whose sputum cultures show them to harbour drug-sensitive organisms. It was logical, then, to investigate the efficacy of regimens with a longer interval between successive doses; these would be more convenient for the patient and would make it easier to organize and supervise mass treatment programmes. The findings in this recent study² are that, although once-weekly therapy from the beginning of treatment gives unsatisfactory results, a highly satisfactory response in slow inactivators of isoniazid can be achieved if, for the first four weeks, a moderate *daily* dose of isoniazid plus streptomycin is given and this is followed by high *weekly* doses of isoniazid plus streptomycin. However, the response is considerably less satisfactory in rapid inactivators. If a method of compensating for this deficiency can be found, the prospects for evolving a highly effective once-weekly regimen are excellent.

In other chemotherapy trials being carried out with WHO assistance in Algeria, Poland and the USSR, particular attention is being paid to the ambulatory

chemotherapy of chronic patients and to the behavioural and social factors involved when patients default from treatment.

Research in tuberculosis epidemiology is being promoted by the Organization in Uganda, where a tuberculin survey was begun in 1970 with the collaboration of the East African Medical Research Council and the Medical Research Council, London. It covers a population that had been surveyed by WHO more than 10 years previously and had not been subjected in the meantime to the influence of systematic tuberculosis control. The results of this resurvey will provide useful information on the natural trend of the disease in an East African country. Similar material has been collected from other countries, and, by analytical methods developed in The Hague by the WHO-assisted Tuberculosis Surveillance Research Unit of the International Union against Tuberculosis, it should be possible to make reliable estimates of the annual risk of infection among the populations examined. This method of measuring the tuberculosis problem in representative samples of non-BCG-vaccinated population groups should be particularly valuable as it allows of valid international comparisons at a time when tuberculosis mortality figures have lost much of their statistical significance owing to the efficacy of modern chemotherapy and when morbidity statistics still suffer from lack of bacteriological confirmation.

An operational aspect of epidemiological research is shown in the second of a series of studies, supported and published by WHO, on the use of an epidemiological model for estimating the effectiveness of tuberculosis control measures.³

Leprosy

The information available to WHO shows that in the past five years over 500 000 cases of leprosy have been detected and registered in 75 countries. Case-finding continues to be very active in a great number of countries, but the limitations of anti-leprosy drugs are a serious obstacle to control of the disease. Nevertheless, the number of cases released from control has increased considerably, reaching a figure of 132 000 in 51 countries during the period 1965-1970. Taking into account the estimated number of persons suffering from leprosy in 1965 (about 11 million) and the expected number of new cases in the subsequent five years, and allowing for deaths and for cases released from control, it appears probable that the total number of cases in 1970 was substantially similar to that in 1965. One development, however, that requires

¹ Bull. Wld Hlth Org., 1970, 43, 17-34, 35-40.

² Bull. Wld Hlth Org., 1970, 43, 143-206.

³ Bull. Wld Hlth Org., 1970, 43, 1-16.

close attention is the difference in the distribution of leprosy in many countries as a consequence of industrialization, urbanization and related population movements.

For the control of leprosy, WHO provided assistance in 24 country and inter-country projects; it also gave technical guidance in connexion with several programmes assisted by UNICEF. Valuable financial contributions for leprosy control programmes as well as for research have been received through the WHO Special Account for the Leprosy Programme from the Order of Malta (Comité international de l'Ordre de Malte pour l'Assistance aux Lépreux), Emmaüs Suisse (Aide aux Lépreux) and the Deutsches Aussätzigen Hilfswerk e.V.

Field or laboratory studies concerning *Mycobacterium leprae* and the chemotherapy, prevention, epidemiology, pathology and immunology of leprosy were conducted or supported by WHO in 12 countries. Many papers dealing with WHO-assisted research were published, eight of them in the *Bulletin*.¹

The need to conduct leprosy control activities, not as programmes isolated from other health pursuits, but rather as an integral part of national general health services, was stressed both by the WHO Expert Committee on Leprosy that met in June and by the regional seminars held in Kampala and in Aska, India (see pages 185 and 224). Data presented at the Kampala seminar suggested that some 40 per cent. of the estimated number of leprosy cases in the African Region were registered and that about 50 per cent. of these were generally under treatment.

The Expert Committee recommended,² *inter alia*, that the regular treatment of lepromatous and borderline patients should be continued for at least 10 years after inactivity of the disease has been achieved before they are released from control. It also recommended that further properly controlled trials be carried out into the efficacy of low-dosage and conventional dapsone treatment, certain studies having suggested that the low dosage might be sufficient.

Research

In line with the Expert Committee's recommendation is the WHO-assisted double-blind trial that has been under way for some time in India. The object of this trial is to study the action of orally administered dapsone in lepromatous patients taking the conventional dosage (maximum weekly dose: 10 mg per kg of body-weight) or one-third of this dosage. After 21 months the preliminary findings indicate that the

overall improvement of cases is similar in both groups. However, the lower dose, though apparently better tolerated than the higher, may not be fully therapeutic in all cases and may therefore expose some patients to the risk of developing dapsone-resistant strains of *Myco. leprae*. Similar studies are being conducted in Mali and Somalia, with WHO assistance.

In Venezuela, the trial with repository dapsone injections also seems to show a similar degree of efficacy for both the conventional and the low dosages.

As in previous years, emphasis was laid on research into the effective prevention, as well as treatment, of leprosy. The findings made so far in the 1964-1974 controlled trial of BCG vaccination that is being organized by WHO in Burma do not allow the precise formulation of definite conclusions as to the extent to which BCG vaccine protects against leprosy, although they do suggest that better results might be obtained by vaccination of children under four years of age (perhaps even of the newborn) than by that of older children. By its very nature, this trial is a long-term undertaking and findings in the years to come may provide a more definitive answer.

Connected with this Burma trial are several studies in epidemiology, including the development of epidemiological models in leprosy.

The WHO-assisted trial of chemoprophylaxis with dapsone in the Philippines is continuing. The maximum total weekly dose is 10 mg for one- to two-year-old children, rising to 100 mg to 150 mg for 14-15 year-olds. After four years the incidence stands at 6.67 per thousand for the treated group and 12.15 for the control group, indicating a protection of about 45 per cent. This rather limited prophylactic efficacy of dapsone might have been improved by a higher dosage. In India a new WHO-supported investigation into the prophylactic value, among leprosy contacts, of dapsone at certain dose schedules was started in 1970. Among a surveyed population of some 215 000 inhabitants, 7555 leprosy cases (538 lepromatous) were found. The study will concentrate on 900 contacts of the lepromatous patients and 2000 contacts of patients with other forms of the disease and will also be directed to the possibility of determining the minimum period of prophylaxis after negativity of the index case has been achieved.

The morphology of *Myco. leprae* still needs elucidation for a proper understanding of the disease process. Electron microscope studies in Japan have revealed that this and other mycobacteria have a distinct striation (band structures) around the cell body and that the number of bands is inversely related to the speed of cell multiplication. It does not appear, however, that this can be used to differentiate among the mycobacteria.

¹ *Bull. Wld Hlth Org.*, 1969, 41, 779-792, 793-804; 1970, 42, 235-281, 631-634, 667-672, 673-702, 703-709; 43, 559-569.

² *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 459.

WHO has also supported a number of studies concerned with *in vitro* and *in vivo* cultivation of mycobacteria and with the viability of *Myco. leprae*. A significant finding from Japan is that, while the viability of *Myco. leprae* is not seriously affected by freezing and storage at -25°C , its survival is completely inhibited by heating at 60°C for 30 minutes. At the WHO Regional Reference Centre for *Mycobacterium leprae*, Atlanta, Ga., USA, it has been found that "cool-drying" may be a more satisfactory way of preserving *Myco. leprae* strains than "freeze-drying". Some success has been achieved in Japan with the cultivation of *Myco. leprae* in various semi-liquid agar media, and subcultures to the second and third generations have been reported, but a trial of cell-free cultivation of *Myco. leprae* and *Myco. lepraemurium* by the Murohashi-Yoshida method was not successful. In cell-containing cultures, limited *in vitro* proliferation of *Myco. leprae* was obtained by diffusion-chamber techniques in Japan, and other studies there have centred on cultivation of the same organism in fibroblast cultures. In the same country a number of substances have been tested for their activity as growth factors in culture media. In the United States of America continued experiments on the cultivation of *Myco. leprae* and *Myco. lepraemurium* gave negative results with macrophages from animals subjected to immunosuppressive procedures but more promising results with mouse bone-marrow macrophages. Little success having been achieved in the past in the United States in studies of the nutritional fastidiousness of certain mycobacteria, it has been considered necessary to initiate new metabolic and biochemical analyses of the *in vivo* growth of *Myco. tuberculosis* and *Myco. lepraemurium* in the hope of checking the more significant findings with *Myco. leprae*.

Media studies in Czechoslovakia have led to the development of a technique for cultivating *Myco. lepraemurium* in placental and HeLa cell cultures; an attempt will now be made to use this technique for cultivating *Myco. leprae* taken from human biopsy specimens.

Several WHO collaborative research projects have involved the transmission of *Myco. leprae* to animals to assess their suitability as experimental subjects, or to yield information on the host-parasite relationship, on pathological changes in the nerves, on possible treatment innovations and for cell studies. An attempt in Japan to obtain a satisfactory local mouse-adapted strain of *Myco. leprae* was unsuccessful but another Japanese study indicated that high yields of the organism could be obtained after 24 weeks from hamsters thymectomized and treated with testosterone; the white Wistar rat proved to be less susceptible to

footpad inoculation than either the mouse or the hamster. In Venezuela certain aspects of delayed hypersensitivity were studied in the guinea-pig, including the effect of thalidomide on experimental autoimmune diseases or allergic encephalomyelitis and experimental allergic neuritis; no significant difference was found between treated and control animals. These studies will continue with rats prone to allergic encephalomyelitis or neuritis. In the Union of Soviet Socialist Republics research is being conducted into the influence of nutritional factors on the susceptibility of a variety of rodents to *Myco. leprae*.

The importance of following the progress of experimental infection in animals over as long a period as possible has been emphasized by studies at the WHO Regional Reference Centre for *Mycobacterium leprae* in London, where several hundred normal and immunologically deficient mice inoculated in various sites have been followed over their life-span. All showed histological involvement of peripheral nerves and towards the end of the second year a high proportion had macroscopic evidence of gross nerve damage. These findings were complemented by studies in the Union of Soviet Socialist Republics showing destructive changes in nerve bundles both at the inoculation site (footpad) and in the neuro-receptor apparatus of the skin (ear, nose) and mucosa (upper lip) as well as generalization of the infection in internal organs of mice two years after inoculation. Experiments with chimpanzees in the same country have shown tuberculoid lesions and mycobacteria in the liver, spleen, lungs and subcutaneous lymph-nodes of one animal repeatedly inoculated over a six-year period.

An investigation in the Philippines, involving the reproduction in mice of two recent human strains of *Myco. leprae* and a long-established mouse-passaged strain, is aimed at yielding a sufficiently large amount of material so that, by comparison of the lepromin from these three strains with that from a group of patients, the identity of the established reference strain may be checked.

The WHO Regional Reference Centre for the Standardization of Lepromin in Tokyo has continued its research on the influence of prolonged refrigerator storage on lepromin. It is concluded that, while storage in the refrigerator for up to three years causes no appreciable loss of potency in "standard" lepromin whether it is freeze-dried or in suspension, freeze-drying is advisable when longer storage is needed.

Immunological problems in leprosy were considered at a WHO meeting of investigators held in June; this meeting is discussed on page 87. WHO-assisted research has been conducted in India into the status of

humoral and cell-mediated immune responses in patients with lepromatous and tuberculoid leprosy; immunoglobulins were found to be elevated in the former. Lymphocytes bearing immunoglobulin determinants in lymph-nodes from normal individuals and lepromatous leprosy patients were estimated with fluorescein-tagged antihuman globulins; the results suggest a relative depletion of the thymus-dependent lymphocytes in these lymph-nodes or an increase in the proportion of lymphocytes committed to humoral responses, or a combination of both factors. The mitogenic response of peripheral lymphocytes to phytohaemagglutinin was also evaluated: in untreated lepromatous patients there was predominantly a depression of mitogenic response, whereas many dapsone-treated patients showed an enhancement of response.

In Mexico, success was reported in purifying *Mycobacterium leprae* and *Mycobacterium lepraemurium* from tissues. A defined antigen from purified *Mycobacterium leprae* was identified by immunological methods. The WHO Regional Reference Centre for *Mycobacterium leprae* in London has studied the role of lymphokines (soluble substances that activate macrophages, released by antigen-stimulated lymphocytes) and of lymphocytes in mycobacterial infections; the results point to the presence of a lymphocyte-macrophage deficiency in patients with lepromatous leprosy. In Brazil, circulating immune complexes were studied by the passive cutaneous anaphylaxis method. In Japan, immunodiffusion and immunofluorescence tests have indicated that *Mycobacterium leprae* contains a specific protein antigen that may not be found in other mycobacteria and that may permit its serological identification. Other serological studies, at the International Reference Centre for the Serology of Leprosy, São Paulo, Brazil, have indicated that there is no characteristic pattern for erythema nodosum leprosum.

In an effort to find a substitute for irradiation for the immunosuppression of thymectomized experimental mice, investigations have been conducted at the WHO Regional Reference Centre for *Mycobacterium leprae*, Atlanta, Ga., USA, on the immunosuppressive effect of various sera, and some promise has been shown by the use of rabbit antilymphocyte sera with adjuvant.

Useful results have been obtained from work at the WHO Regional Reference Centre for the Standardization of Lepromin, Baltimore, Md., USA, designed to improve the uniformity of microscopic work. Studies on the alcohol solubility of basic fuchsin of different commercial samples have yielded a staining method that ensures maximum efficiency in the demonstration of mycobacteria. In the same country, a modification of Nyka's technique has been tested to

improve upon conventional staining of acid-fast organisms.

There has been doubt as to whether the Mitsuda reaction in leprosy, in particular a constant negative reaction, is the result of a purely genetic trait or whether environmental influences play a part. A WHO-assisted study in Brazil among 127 twin pairs has indicated that the Mitsuda reaction, like the Mantoux and Fernandez reactions, depends mainly on environmental factors and is not a genetic trait, although a study in another centre, among contacts of lepromatous leprosy patients (124 families) in Brazil, suggests that the response is due to a familial trait. In the same centre, the *in vitro* technique to test the capacity of macrophage to lyse *Mycobacterium leprae* was improved and standardized.

Endemic Treponematoses and Venereal Infections

Programmes for the control of endemic treponematoses of childhood and venereal infections were assisted in 27 countries, and support was given to 26 field or laboratory projects in 10 countries for both applied and basic research on epidemiological, microbiological and immunological aspects of this group of diseases. Several papers on WHO-assisted and other research in this field were published, two of them in the *Bulletin*.¹

Endemic Treponematoses

Persisting transmission and focal outbreaks of endemic treponematoses were reported from several countries where mass penicillin campaigns had been carried out by the health authorities with international assistance. The Organization therefore concentrated on the reinforcement of surveillance and on sero-epidemiological surveys and further mass treatment.

A WHO-assisted sero-epidemiological sampling survey, undertaken in collaboration with national and international laboratories and the Canadian Students' War against Yaws, was completed in Upper Volta towards the end of the year. Two areas were covered: in the first, a mass penicillin campaign, carried out between 1957 and 1960, had succeeded in reducing the prevalence of infectious yaws from 1 per cent. to 0.1 per cent. in a population of some 300 000; in the second, a similar campaign, carried out among some 40 000 nomads or semi-nomads between 1956 and 1962, had reduced the prevalence from 9 per cent. to less than 1 per cent. In both areas, transmission has persisted and new outbreaks have occurred in spite of

¹ *Bull. Wld Hlth Org.*, 1970, **42**, 180-183, 437-444.

surveillance activities. The recent surveys were carried out according to the methods developed by WHO over the last 10 years. Some 20 000 serum aliquots are being examined at national and international laboratories in Africa and Europe for treponematoses and at the same time for other conditions of public health importance in the areas covered, such as yellow fever and brucellosis.

In Niger a sero-epidemiological survey, started in 1969 by the health administration and the WHO regional treponematoses advisory team, continued. The nomadism of the population and difficult geographical and climatic conditions have created logistic problems. However, the preliminary findings suggest that endemic syphilis has assumed a certain importance in the sahelian zone of Africa. In co-operation with WHO, the health administrations of Mali, Mauritania and Senegal have therefore decided to undertake multipurpose epidemiological surveys in areas of economic importance. The project in Senegal also includes research on the persistence of yaws transmission in relation to an endemic treponematoses occurring naturally in cynomolgus monkeys, taking into account the possibility that the disease might be vector-borne.

During the year, the WHO inter-regional treponematoses epidemiological team completed the field work in its study of endemic syphilis, one of the "disappearing" endemic treponematoses, in the Republic of Bosnia and Hercegovina, Yugoslavia. The first phase of the project, in 1968-1969, had demonstrated the interruption of transmission and the absence of new clinical cases 10 years after a penicillin campaign against endemic childhood syphilis in a population of a million people living in a rapidly developing environment. In 1969-1970, in the second phase of the project, a small number of children born after the mass campaign were nevertheless confirmed to be sero-reactors by specific treponemal antigen tests. The possibility of the occurrence of subclinical infection and the adaptation of the infectious agent to its host in the new circumstances are now being studied. This project is undertaken in collaboration with other WHO programmes so that the serum collections obtained can also be used to establish immunological profiles in respect of certain bacterial and virus infections, malaria and immunohaematological conditions. Several national and international laboratories are taking part in the project.

In Australia, a WHO-assisted sero-epidemiological sampling study of endemic treponematoses was completed among the aboriginal population of the Northern Territory. In West Irian, Indonesia, exploratory sero-epidemiological surveys were undertaken in primitive populations. It was shown that low-level

yaws transmission persists among children in previously holoendemic areas even after mass penicillin campaigns followed by surveillance.

Venereal Infections

The number of reported cases of gonorrhoea continued to rise, in some instances reaching epidemic proportions. Incidence rates for Sweden and the United States of America in 1969, for example, were estimated to be 350 and 900 per 100 000 population respectively, the corresponding figures for 1964 being 295 and 195 per 100 000. In the case of infectious syphilis the upward trend was less marked, although the reported incidence in some countries exceeded the peaks recorded during and following the Second World War.

Syphilis and gonorrhoea have spread rapidly from country to country as a result of the increase in international travel. In some countries, more than 50 per cent. of new cases are believed to be imported from abroad. The collection of data on the role of seafarers in the spread of venereal diseases was completed during the year, as part of a study being carried out by the Organization in co-operation with the International Radio-Medical Centre, Rome. One aim of this study is to assess the potential usefulness of such centres—of which there are several in the world—for gauging the real extent of the problem in shifting populations and for improving the tracing of contacts between countries.

The spread of gonococcal infections by infected asymptomatic females is on the increase, and there is accumulating evidence in WHO-supported studies that gynaecological complications and sterility resulting from gonorrhoea in females are becoming more frequent. Moreover, there have been a number of reports from the Scandinavian countries of benign gonococcal sepsis in women, with skin symptoms in the form of gonococci-containing pustules as well as with joint symptoms and fever, but with few genital symptoms although gonococci are regularly recoverable from the reproductive tract. These developments were among those reviewed during the technical discussions on venereal diseases and their control at the XVIII Pan American Sanitary Conference (twenty-second session of the WHO Regional Committee for the Americas) in Washington, D.C., in October.

Experts from 11 countries collaborated in providing data for a study of 25 years of accumulated experience in the treatment of early, late and congenital syphilis, which was co-ordinated by WHO and completed during the year. The advantages and limitations of penicillin preparation were defined, minimum dosage schedules were reviewed and the long-term outcome

of therapy was evaluated. The study makes it clear that *Treponema pallidum* has fortunately not developed resistance to antibiotics and that penicillin continues to be effective against the treponematoses.

Research

As an aid to the diagnosis of gonorrhoea, an efficient, highly selective growth medium for gonococci, which can be mailed to the appropriate laboratories in miniflasks containing carbon dioxide, has been developed jointly by institutes in the United Kingdom and the United States of America. In addition, studies of serum antibody responses in persons experimentally infected with virulent strains, the isolation of surface antigens from the gonococci and the use of reagents specific for human IgG, IgM and IgA immunoglobulins have paved the way for the field evaluation of serodiagnostic methods both in early symptomatic and in asymptomatic infections. Several hundred gonococcal strains from different countries were examined during the year at the WHO International Reference Centre for Gonococci, Copenhagen, as part of the Organization's programme for the surveillance of changing antibiotic susceptibility among circulating gonococcal strains. More strains are tending to become less susceptible to penicillin and certain other antibiotics. However, appropriate dosage schedules combined with low-level "boosters" (for example, probenecid) can, in most instances, overcome this tendency when it is recognized; and there are several additional injectable and oral antibiotics in reserve to which *Neisseria gonorrhoeae* continues to be susceptible (for example, kanamycin, erythromycin and oleandomycin).

In the treponematoses, the reorientation of the WHO research programme, proposed by the WHO Scientific Group on Treponematoses Research that met in November 1969, was reflected in co-operative studies between laboratories in a number of countries, including Denmark, France, Hungary, Italy, Poland, the Union of Soviet Socialist Republics, the United Kingdom and the United States of America. The subjects investigated included: serum immunoglobulin characteristics in the natural course of treponemal disease and in treated patients; immune tolerance in the treponematoses; and the role of cell-mediated immunity through lymphoblastic transformation in syphilis. At the same time, the immunological and cross-immunological features of syphilis, yaws and pinta in man and animals were further elucidated. Perhaps the most important development was the confirmation of the significant protective immunity against challenge inoculations of pathogenic *T. pallidum* conferred on rabbits by the administration of attenuated vaccine

prepared from aged, viable treponemes. In addition, the protein from *T. pallidum* responsible for production of the protective antibody was more precisely defined.

In a WHO-supported study in France, an explanation was sought for the failure of apparently adequate penicillin treatment in a few cases of treponemal disease, in which the patients were found to have persistent treponemes in the lymph glands. The possibility that treatment had failed because of an inadequate concentration of the antibiotic in serum or tissues was eliminated, and the investigation is continuing.

Electron-micrographic investigations of *T. pallidum* in the Union of Soviet Socialist Republics suggested that treponemes exposed to penicillin may develop L-forms of reduced virulence, giving the impression that the disease is cured, although the treponemes regain full virulence if treatment is stopped or immunity weakened.

The WHO international reference centres for treponematoses dispatched several hundred shipments of reference preparations, reagents and control sera to national and other laboratories. Twenty-five countries took part in the 1970 inter-laboratory proficiency testing programme in syphilis serology of the WHO International Reference Centre for the Serology of Treponematoses, Atlanta, Ga., USA. The WHO International Reference Centre for the Serology of Treponematoses, Copenhagen, and the WHO International Reference Centre for Endemic Treponematoses, Paris, collaborated in sero-epidemiological investigations with UNRWA and with local laboratories in Australia, Indonesia, Malaysia, Upper Volta and Yugoslavia. Progress was made in various collaborating laboratories in the standardization of automation for the VDRL reagent test and the further development of haemagglutination testing procedures in syphilis.

Smallpox

At the end of 1970, the fourth year of the intensified programme of smallpox eradication, smallpox was considered to be endemic in 15 countries—two fewer than in 1969 and 12 fewer than in 1967, the first year of the programme—and eradication programmes were in operation in all 15. Smallpox incidence decreased for the third consecutive year despite substantially more complete reporting in most countries. The number of cases has declined from 131 000 in 1967 to 80 000 in 1968, 54 000 in 1969, and about 30 000 in 1970—the lowest number ever reported. The total number of countries reporting smallpox has been almost halved, from 42 in 1967 to 23 in 1970.

In western and central Africa the last endemic cases were thought to have occurred in September 1969. However, in April 1970 there was an outbreak of 64 cases in Nigeria in a focal area where infection had continued undetected for eight months. Intensive and widespread surveillance and containment measures were conducted, and no further cases were detected after mid-May. Surveillance activities and maintenance vaccination programmes were continued in all countries. More than 120 million people—almost the entire estimated population of the 20 countries concerned—have been vaccinated since January 1967 with bilateral aid from the United States of America and assistance from WHO.

In eastern and southern Africa eradication programmes are being implemented in 13 countries receiving supplies and equipment from WHO in addition to technical assistance. Smallpox transmission appears to have been interrupted in all but four countries in this area—Burundi, the Democratic Republic of the Congo, Ethiopia and Sudan. By the end of 1970 over 2 million of the 3.5 million population of Burundi had been vaccinated, and cases were rapidly declining. In the Democratic Republic of the Congo over 17 million of the estimated population of 22 million had been vaccinated under a well organized and supervised systematic vaccination programme being carried out with technical advice from WHO. Despite improved reporting and a strengthened surveillance programme the reported number of cases declined by two-thirds, and smallpox transmission appeared to have been interrupted in all but two provinces. The situation in Ethiopia and Sudan continued to cause serious concern. Over 600 cases were reported by Ethiopia, and the disease appears to be widespread and considerably under-reported. An eradication programme was begun towards the end of the year. In Sudan, smallpox incidence increased to levels higher than any observed in the past 15 years, major epidemics occurring throughout the southern and eastern provinces. Although an eradication programme has been under way for two years, progress in the vaccination programme has been disappointing, and surveillance activities have been limited. Special emergency measures were instituted in an effort to cope with the problem.

In South America endemic smallpox persists only in Brazil. Under a WHO-assisted systematic vaccination programme which has been steadily accelerated, over 75 million of the 90 million inhabitants have been vaccinated and programmes have been completed in all but the sparsely settled Amazon region. Smallpox incidence declined sharply during 1970 and, for the first time, failed to exhibit the seasonal increase normally observed during the period July to November.

Special surveillance programmes have also been established in all states except in the Amazon region; all suspected cases are immediately investigated and containment measures are taken. Smallpox foci are few in number and confined to isolated, remote areas, and stringent measures are being taken to detect and eliminate them.

In Asia smallpox incidence declined significantly in India and Indonesia. In the latter the smallpox eradication programme begun in 1968 progressed well, and by the end of 1970 more than 80 per cent. of the population were in smallpox-free areas. In India smallpox incidence decreased for the third consecutive year and reached the lowest level ever recorded. This is mainly attributed to the use of improved vaccines and a generally improved vaccination programme. However, surveillance activities are still very limited and the disease continues to be considerably under-reported. In Afghanistan, East Pakistan and Nepal systematic vaccination programmes and surveillance activities were greatly intensified during 1970. However, more complete reporting, coupled with field investigations which detected additional cases, resulted in all three reporting almost as many cases as in 1969 or more. In West Pakistan, where the eradication programme was seriously disrupted by the political re-organization into four provinces, smallpox incidence showed little change.

Reference is made on page 4 to the importation of smallpox into Europe.

The Organization helped to promote the production of adequate quantities of freeze-dried vaccine, providing advice and equipment to more than 25 laboratories in endemic areas. More than 350 lots of vaccine were tested during 1970 by the WHO International and Regional Reference Centres for Smallpox Vaccine in Utrecht, Netherlands, and Toronto, Canada. Vaccine production in endemic countries is being increased, and all the vaccine produced now meets the standards of potency established by the WHO Expert Committee on Biological Standardization; most of it also meets the stability requirements. During 1970 donations of vaccine were received from Belgium, Canada, China (Taiwan), Hungary, Kenya, the Netherlands, Romania, Sweden, Switzerland, Thailand and the Union of Soviet Socialist Republics as contributions to the WHO Special Account for Smallpox Eradication. More than 37 million doses were distributed, a substantial increase over the 13 million distributed in 1967. In addition, through bilateral assistance, the Union of Soviet Socialist Republics provided over 100 million doses of vaccine for eradication programmes, and the United States of America 40 million doses.

By 1970 the bifurcated needle, first introduced for field work in 1968, had been accepted as the vaccination instrument of choice by all countries carrying out eradication programmes. The jet injector continued to be used—particularly in Brazil, western and central Africa and the Democratic Republic of the Congo—in urban and other areas where large numbers of people could gather at a given site. Apart from speeding up the rate of vaccination, both instruments continued to produce a consistently higher proportion of successful vaccinations.

In December, an inter-regional seminar on surveillance and assessment in smallpox eradication was held at the South-East Asia Regional Office in New Delhi. The participants included national programme officers, WHO field staff from the smallpox eradication projects in Afghanistan, Ethiopia, India, Indonesia, Nepal, Pakistan and Sudan, as well as headquarters staff and regional advisers (see also page 269).

Following the wide distribution of the teaching material prepared by WHO in 1969 to assist in the diagnosis of smallpox in African patients, similar teaching aids—including sets of slides and posters and a diagnostic guide—to illustrate the diagnosis of smallpox and chickenpox in Asian patients were produced during 1970.

The illustrated guide¹ to the laboratory diagnosis of smallpox was distributed to all interested laboratories. Standard reagents for the tests described have been produced by collaborating laboratories and are being supplied, on request, to national diagnostic laboratories in the endemic areas. A WHO-sponsored course on the laboratory diagnosis of smallpox was held in Bandung, Indonesia, for countries of the South-East Asia Region.

Information on the progress of the programme was again provided by the publication every three weeks of a series of articles on smallpox surveillance in the *Weekly Epidemiological Record*.²

With regard to research, particular emphasis was laid on studies of the epidemiology of smallpox, the nature of monkeypox and experimental studies of smallpox infection in monkeys, the development and application of new techniques of vaccine production, and field techniques for the rapid laboratory identification of smallpox and chickenpox infections.

As in the past, close collaboration was maintained with countries providing bilateral assistance, and with UNICEF, the League of Red Cross Societies and other organizations assisting the programme.

Virus and Rickettsial Diseases³

Reference Centres

The laboratories designated as WHO reference centres make an invaluable contribution not only to WHO's programme but to virology in general. They serve as sources of authoritative advice to national virus laboratories and as centres for training virologists in research and in diagnostic work, and they provide selected laboratories in all parts of the world with prototype strains of virus, diagnostic and reference reagents, antigens and cell cultures. Over a 12-month period four of the centres have between them distributed 2514 strains of viruses, 1888 ampoules of antisera, mainly for reference purposes, 1274 ampoules of antigens and about 100 samples of cell cultures. The other centres have also provided similar services, though to a lesser extent. Thus the total volume of assistance given by the reference centre network has a substantial influence on progress in the understanding and control of virus diseases.

Reagents Programme

The Organization's programme for the preparation and testing of viral antisera for specificity has now been in progress for a decade. Tests have been completed on 42 enteric virus antisera (prepared in horses and available in large quantities),⁴ and 19 other enteric virus antisera are now being tested. Similar studies have been or are being made on antisera for 27 of the respiratory viruses other than influenza. The completion of these studies will provide selected virus laboratories throughout the world with the possibility of obtaining for reference and, in some cases, diagnostic purposes, authenticated reagents for practically all the enteric and respiratory viruses pathogenic to man. Similar schemes, suitably modified, are being developed for the reagents for arboviruses, and plans have been made for the collaborative testing of mycoplasma reagents prepared by the Research Reference Reagents Branch of the National Institute of Allergy and Infectious Diseases in Bethesda, Md., USA.

¹ World Health Organization (1969) *Guide to the laboratory diagnosis of smallpox for smallpox eradication programmes*, Geneva.

² *Wkly epidem. Rec.*, 1970, **45**, 17-27, 65-71, 93-98, 137-143, 177-185, 209-221, 249-256, 278-282, 305-309, 337-343, 368-372, 397-403, 453-458, 485-489, 520-523, 558-563.

³ For work on comparative virology, see page 26.

⁴ *Bull. Wld Hlth Org.*, 1965, **33**, 761-772; 1968, **38**, 577-593; 1970, **42**, 847-863.

Work was continued on the antigenic characterization of the rhinoviruses, the commonest of the agents causing disease of the upper respiratory tract. In the first phase 55 different types and one sub-type were identified. In the second phase, completed in 1970, 44 potentially separate types were compared in WHO reference centres and other laboratories collaborating in this work.

Reports by Virus Laboratories

Standard monthly reports on viruses isolated and on cases diagnosed by serology are received from laboratories in 28 countries. Some reports cover all the virus laboratories in a country, others come from one or more individual laboratories. In 1969, the latest year for which information is available, over 30 000 reports of isolations of viruses or of serologically diagnosed cases were received; in addition, an increasing amount of information is being received each year about outbreaks investigated and other field studies made by the laboratories. The data are collated and analysed at WHO headquarters and circulated quarterly to all reporting laboratories. With the use of the computer WHO is now able to provide the reporting laboratories and others with information not otherwise readily obtainable—for example, on the prevalence of particular viruses in different parts of the world.

Team for Special Studies in Virology in Africa

The WHO team for special studies in virology in Africa, which started its work in 1969 at the East African Virus Research Institute, in Entebbe, is developing a comprehensive programme of research on the virus diseases—other than arbovirus diseases—that are of public health importance in eastern Africa. The two-storey laboratory extension built with funds provided by the Wellcome Trust was completed and fully equipped in December 1970. Collaboration with the health services is being established, and a forward laboratory is being manned in the Kampala hospital/medical school complex. The team is also assisting in the teaching of virology at Makerere University College.

*Influenza*¹

Following the occurrence of influenza A2 in France and Spain in October 1969, some two to three months earlier than usual, infection spread rapidly to Israel, Yugoslavia, Italy, Switzerland, Norway and Portugal, in that order, and by the end of

January 1970 almost the whole of Europe was heavily attacked. A large epidemic was also reported from Mexico, and circumscribed foci of infection were recorded in widely scattered parts of the world—Algeria, Canada, Fiji, the Philippines, Sudan and Uganda. The United States of America, in which an extensive and severe epidemic had occurred the previous year, escaped very lightly in 1970.

In some countries in Europe the severity of the illness seemed to be greater than in 1969, and in the United Kingdom the number of deaths from acute respiratory disease may have been higher than in any corresponding epidemic season in the past decade. In other countries the increase in deaths was not so marked. Further information is necessary before a full assessment can be made of the experience in Europe in 1970.

In the southern hemisphere between March and August epidemics were reported successively from South Africa, Fiji, New Zealand, Argentina, Australia (Northern Territory, Queensland, Victoria and New South Wales), Panama, Chile, and the Territory of Papua and New Guinea. Cases were reported generally as mild.

In both hemispheres the epidemics were associated with a virus similar to the A2/Hong Kong strain. In the United Kingdom, France and Portugal some of the strains showed a slight antigenic shift from the original A2/Hong Kong strain, but this was not considered to be of epidemiological significance.

Much new knowledge about the antigenic and other properties of the Hong Kong virus is contained in the proceedings of the international conference jointly sponsored in 1969 by Emory University, Atlanta, Ga., USA, the Center for Disease Control (formerly the National Communicable Disease Center) of the United States Department of Health, Education, and Welfare, and WHO.² The problems posed by the relative inefficiency of current inactivated and live vaccines are carefully considered in the light of this new knowledge, and recent work on chemotherapy and chemoprophylaxis also receive great attention. The prospects for effective prevention of influenza appear to be good in the long term, but much laboratory and field research is required before the hopes expressed can be translated into practical measures. In view of the need to make the information available to research workers as soon as possible, special arrangements were made for the publication of the proceedings within three months of the conference. A comprehensive review of the proceedings, by the former Director of the

¹ Animal influenza is dealt with on page 24.

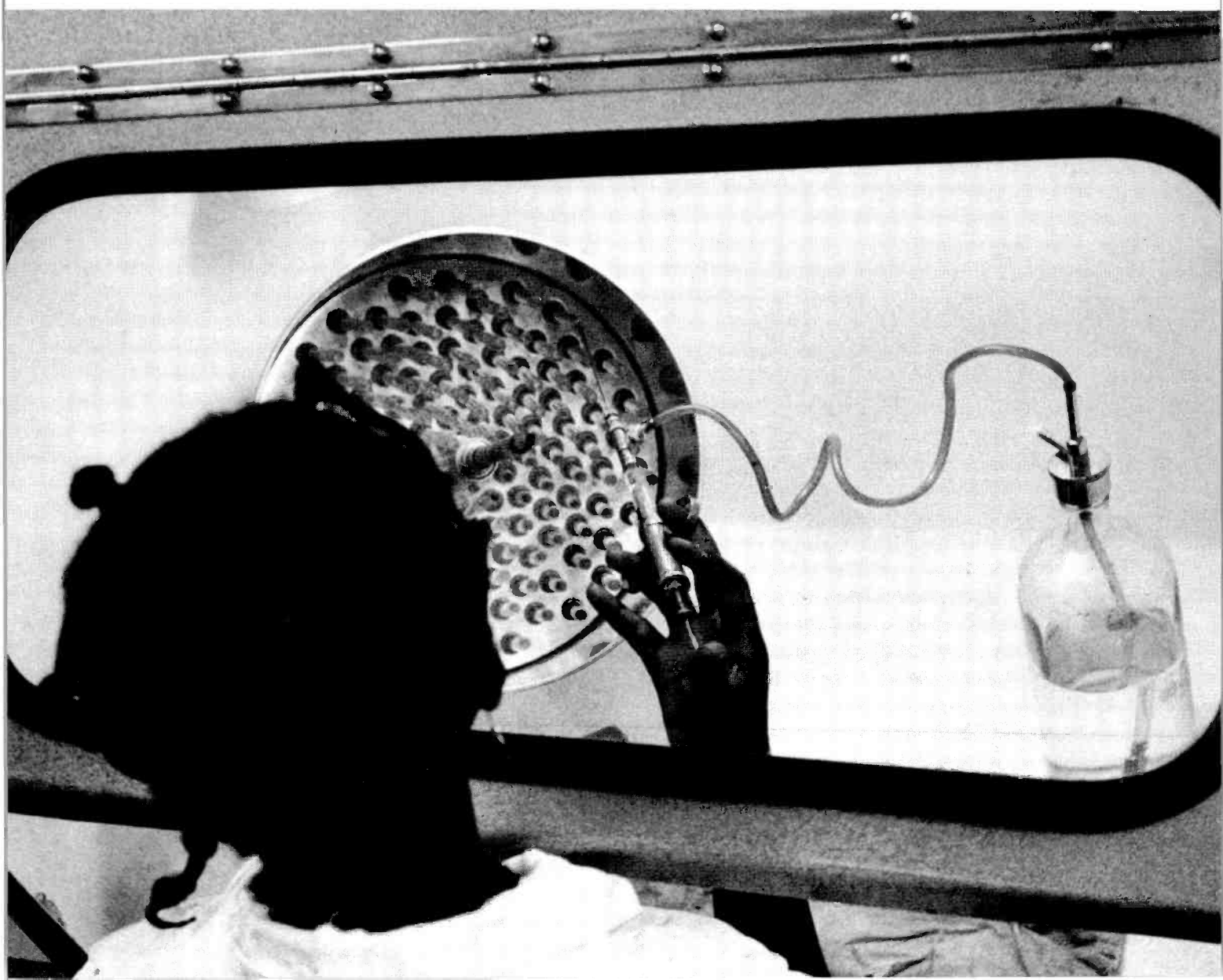
² *Bull. Wld Hlth Org.*, 1969, **41**, No. 3-4-5.



SMALLPOX

The number of smallpox cases reported declined from 131 000 in 1967 to 30 000 in 1970, but the disease is still endemic in 15 countries; all have eradication programmes. WHO is assisting many countries to manufacture vaccine.

Below: One operation in vaccine production at a Nigerian laboratory.



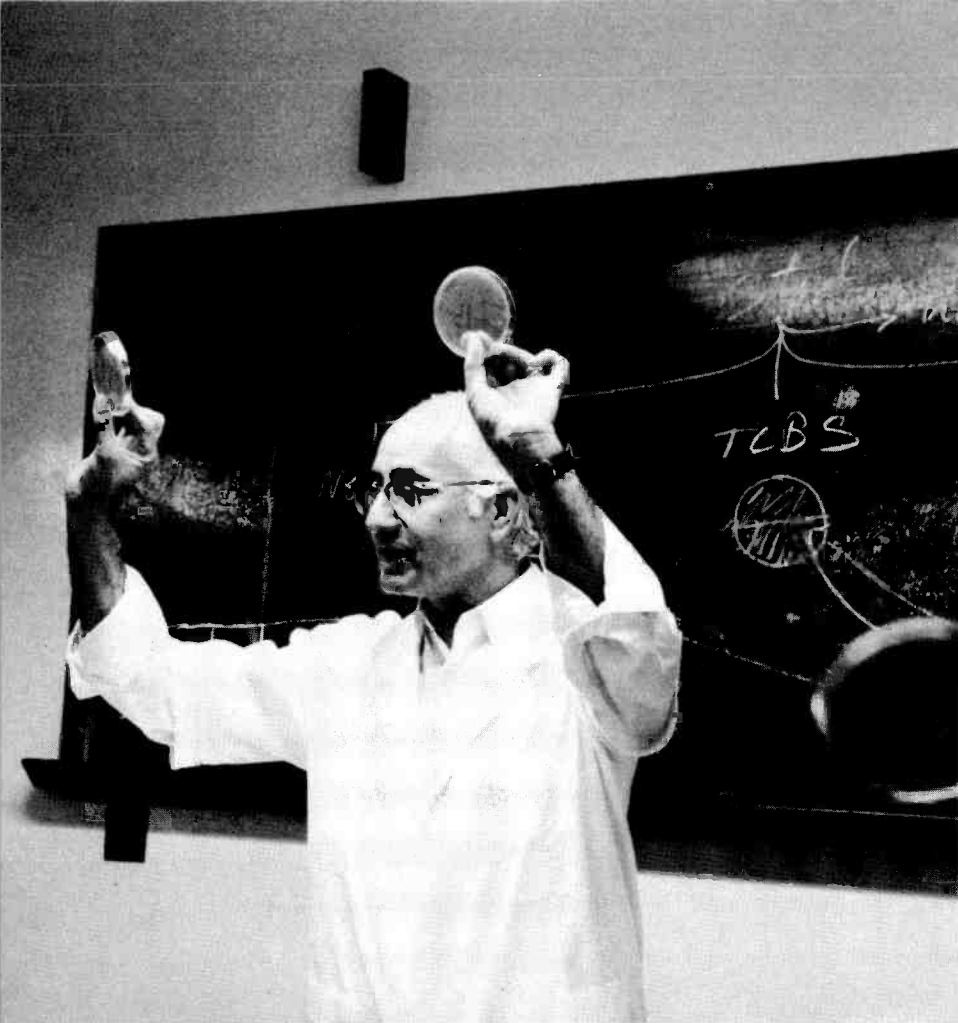


TSETSE FLY CONTROL

In Kenya, WHO is executing agency for a UNDP/SF project on operational research on trypanosomiasis in which new techniques for aerial spraying of insecticide (particularly as water-in-oil emulsion) have proved effective against tsetse flies.

Left: A spray-plane takes on its load of insecticide.

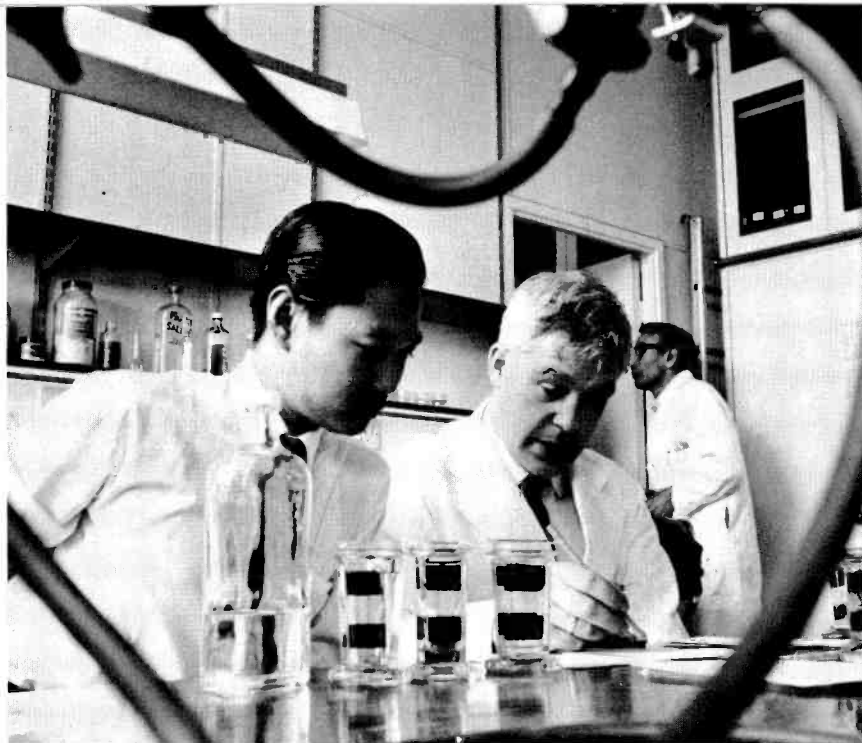
Right: The more costly method of ground barrier spraying is still used to isolate an area before aerial spraying starts.



CHOLERA

To learn how to protect the population against cholera, 70 health workers from African countries attended courses organized by WHO in September in Bobo-Dioulasso, Upper Volta, in French and in Ibadan, Nigeria, in English.





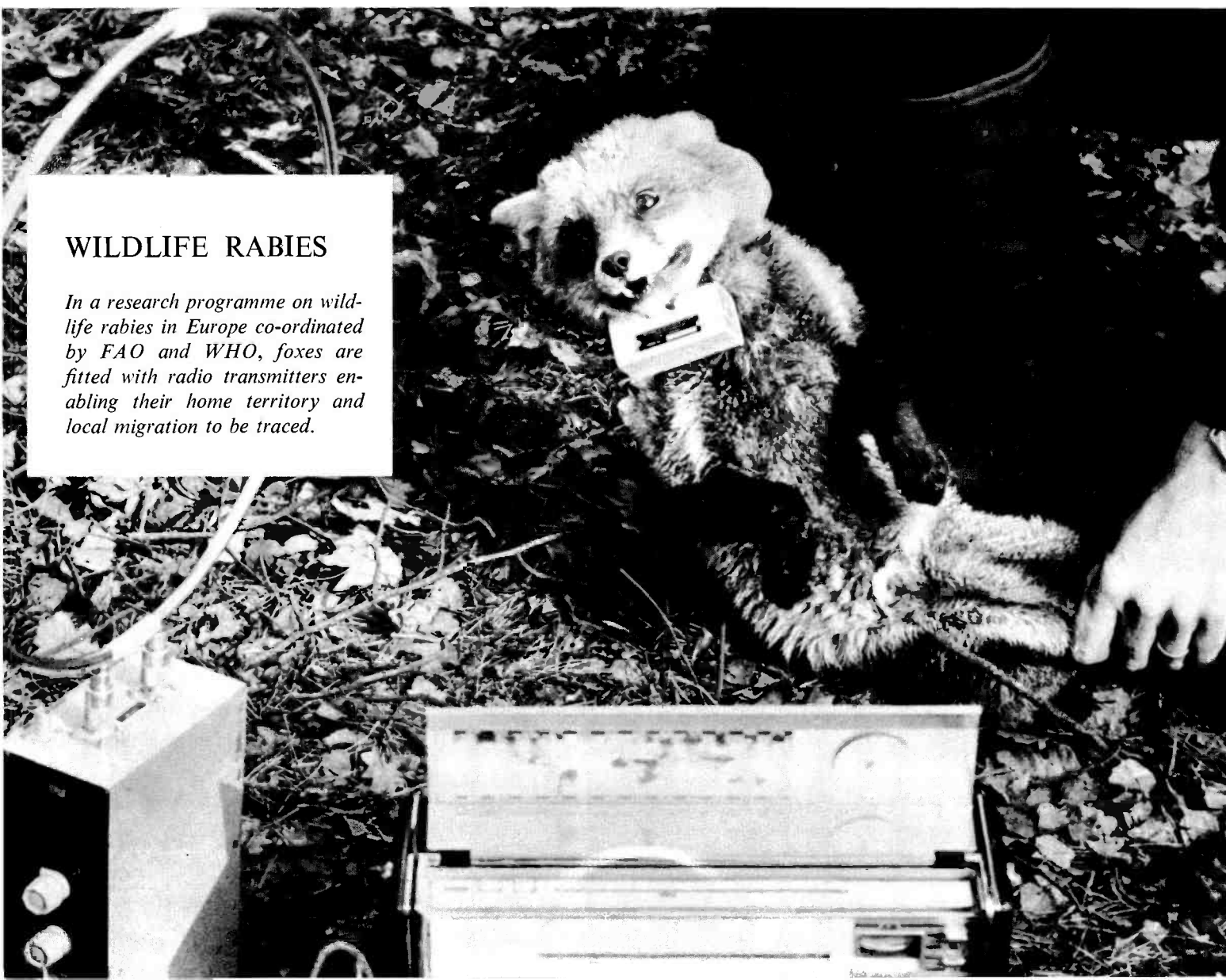
INFLUENZA

The World Influenza Centre, National Institute for Medical Research, London, identifies influenza viruses sent in from all over the world, and maintains a large collection of live viruses as reference material.



WILDLIFE RABIES

In a research programme on wild-life rabies in Europe co-ordinated by FAO and WHO, foxes are fitted with radio transmitters enabling their home territory and local migration to be traced.



World Influenza Centre, was published in the *WHO Chronicle*.¹

In contrast to the worldwide spread of virus A2, virus B was rarely reported. It was usually associated with sporadic cases, although there were circumscribed outbreaks in Bulgaria in January, and small outbreaks in the United Kingdom between February and April.

Reagents for the identification of influenza viruses and for use in serological studies were distributed to the 88 national influenza centres in 57 countries. They were prepared by the International Influenza Centre for the Americas, in Atlanta, Ga., USA, and were tested there and at the World Influenza Centre in London. The two Centres received for characterization some 700 strains of virus A from 63 countries.

Enteroviruses

An analysis of the world state of poliomyelitis based on data available in the years 1951-1955 and 1961-1964—i.e., before and after the use of vaccines—was brought up to date and published.² The data clearly demonstrated that the countries of the world fall into two groups—those in which poliomyelitis has been reduced through vaccination to a level at which it is no longer a serious public health problem, and those in which it is apparently increasing. In the well-vaccinated countries (no matter whether live or killed vaccine is used) not only has the clinical disease more or less disappeared, but the prevalence of the natural viruses has been reduced to a point where their isolation is difficult or, often, impossible. In those developing countries where the incidence is rising, the number of cases is, as yet, nowhere near the high level experienced in Europe and North America before vaccination became general, but the number and size of the outbreaks is increasing and the menace of extensive epidemics looms larger year by year. Problems of control in these countries and means of dealing with them are discussed in the review.

Two studies were started during the year as a result of the consultation on poliomyelitis³ held in 1969. Eleven laboratories in nine countries are taking part in a WHO collaborative study on cases of acute spinal paralysis in patients in well-vaccinated countries. The investigation will be continued over a number of years with a view to determining more definitively whether or not there is now a measurable risk of paralytic disease associated with the vaccine.

The second study, on current and new methods of intratypic differentiation of strains of poliovirus, was started in three laboratories.⁴ Preliminary results emphasize the inherent difficulties of developing techniques that have the required degree of reliability. Work is concentrated at present on the aluminium hydroxide absorption-elution marker test and on the preparation of strain-specific antisera for use in serological marker tests.

Another conclusion reached during the 1969 consultation on poliomyelitis was that for the preparation of type 3 vaccine the lowest possible passage level of the vaccine strain should be employed. A batch of seed virus that is only one passage from the original Sabin virus has been made available to WHO, and arrangements are being made for the completion of tests on this seed-lot before it is supplied to producers wishing to use it for vaccine production.

The low seroconversion rates often obtained in children in tropical areas receiving live poliovirus vaccines are being investigated. The rates have been found to be particularly low in Nigeria, but a preliminary study carried out in Entebbe by the WHO team for special studies in virology in Africa suggests that in Uganda they may be higher. Further comparative studies are being set up in East and West Africa. Meanwhile, a similar study is being made at the virus laboratory at Vellore, southern India. About 200 children have been vaccinated and specimens of blood and faeces—collected before vaccination and at intervals afterwards—are being examined in the laboratory. This study should help to show whether the low seroconversion rates are due to a failure of the vaccine strains to multiply in the intestines because of interference from other enteroviruses (for which there is some, but not conclusive, evidence) or because of local gut immunity derived from previous exposure to natural polioviruses or from other antigenically similar enteroviruses.

Hepatitis

The Australia antigen (so called because it was first found in the serum of an Australian by Blumberg and his associates during a study of lipoprotein antibodies in persons given blood transfusions) has now been conclusively shown to be associated with serum hepatitis but not with infectious hepatitis. Though it has not yet been proved that the antigen is a causal agent of serum hepatitis, it is obviously important to test for the presence or absence of the antigen in blood donors and in pools of blood products. A number of tests for the antigen and its antibody have been developed. Their sensitivity and practicability vary, and the main objective of a

¹ *WHO Chronicle*, 1970, 24, 89-98.

² *Bull. Wld Hlth Org.*, 1970, 42, 405-417.

³ *Bull. Wld Hlth Org.*, 1969, 40, 295-300, 925-945.

consultation held in May 1970 was to describe the tests in detail.¹ Experienced workers could then begin to carry them out to obtain sound information on their comparative usefulness and with a view to their eventual use in blood banks for routine screening. It is estimated that, at the present level of sensitivity of the tests, their use would reduce the risk of infection with serum hepatitis by only 25 per cent.

Arboviruses

The WHO-assisted trial of inactivated Japanese encephalitis virus vaccine started during 1969 in Choll-la Puk-do Province, in the Republic of Korea, was extended for another year; a further 40 000 children of six and seven years of age were vaccinated with two doses, each of 1 ml, given two weeks apart. The children vaccinated the previous year were given a reinforcing dose. No reports of adverse local or general reactions have been received, and serological studies have shown that the vaccines used gave a very satisfactory seroconversion rate and high levels of antibody. The levels one year after primary vaccination and one to two months after the reinforcing dose are being investigated.

The implications of the outbreaks of yellow fever in five countries in West Africa during 1969 were discussed by the Twenty-third World Health Assembly as a supplementary item on its agenda. Realizing the risk of further outbreaks and the gravity of the problem for countries in all continents, the Assembly adopted a resolution recommending that each endemic country should set up a scheme for the immediate investigation of suspected cases and, as far as possible, the organization of regular vaccination programmes. It also requested non-endemic countries to provide aid for the endemic countries to establish these programmes and deal with emergencies as they occurred.

In conformity with this resolution, WHO has set up a unit in West Africa to collect and disseminate information and to assess the nature and possible risk of spread of disease as soon as the first cases occur. The unit, established in Abidjan, is to act as a centre for information on multilateral and bilateral assistance, and will assist in ensuring that available external aid is allocated to the areas of greatest need.

The Organization has also formed emergency aid teams that can move into an area immediately on receipt of a request from a government in order to provide expert diagnostic services and advice on control measures as well as preliminary supplies of vaccine and insecticides. For this purpose depots of

yellow fever vaccine (two million doses) as well as of supplies and equipment for vector control (see page 42) have been established. The Governments of Brazil and Colombia have donated supplies of vaccine free of charge and have offered further large amounts at low cost, and the Government of Sweden has donated US \$15 000 for the purchase of refrigerators and other equipment for mass vaccinations. A donation has also been made by Monaco, and means of implementing an offer made by the Government of the United States of America to provide substantial assistance to match donations made by other countries outside Africa are being explored.

In addition, WHO is assisting a long-term programme of research on vectors and reservoirs of infection being carried out with the collaboration of the Office de la Recherche scientifique et technique outre-mer and the Organization for Co-ordination and Co-operation in the Control of Major Endemic Diseases, in Bobo-Dioulasso, the Rockefeller Foundation Laboratory at the University of Ibadan, in Nigeria, and the Center for Disease Control of the United States Department of Health, Education, and Welfare, in Atlanta, Ga., USA.

Although only a few sporadic cases of yellow fever were reported in West Africa in 1970, the possibility of widespread epidemics is still present, and vaccination and vector control activities must be maintained.

Following the completion of the field work in the WHO-supported serological and entomological surveys of yellow fever in Ethiopia,² laboratory examinations have been started.

Trachoma

Trachoma is the most important single cause of preventable blindness in the world.

WHO continued to support control programmes in nine countries in Africa and Asia by providing personnel, supplies, assistance for training and technical guidance. Emphasis is being gradually shifted from specialized programmes to the integration of anti-trachoma work into basic health services.

From a review of the experience accumulated during approximately 20 years of WHO assistance, revised criteria for trachoma control programmes have been worked out. The essential features are planning within national facilities available, training of local personnel and wider treatment coverage of the population. Stress is laid on reduction of severity and prevention of complications as the first objectives (rather than on immediate reduction of prevalence), and on the importance of concurrent evaluation of results. In order to promote

¹ *Bull. Wld Hlth Org.*, 1970, 42, 957-992.

² See *Off. Rec. Wld Hlth Org.*, 180, 10.

the use of uniform methods and criteria, a field guide has been prepared. It contains detailed information and instructions on the clinical and laboratory diagnosis of trachoma, examination procedures, sampling methods for use in control programmes, the recording and processing of data and methods of treatment.

The Organization's assistance to trachoma research has included support to laboratories in Algeria, Denmark, Israel, Tunisia, the Union of Soviet Socialist Republics and the United States of America. The International Reference Centre for Trachoma, in San Francisco, Calif., USA, has provided standardized reagents and protocols of techniques to laboratories in all continents, and in March organized a meeting on the public health aspects of trachoma and related diseases.

The most significant developments in research, some of them in WHO-assisted programmes, have arisen from studies on the structure and metabolism of the agent, the development of more sensitive and specific laboratory methods for its isolation and the study of its antigenic structure, and the use of certain species of monkeys as experimental models. This has facilitated the testing of new compounds for inhibition of the agent, the development of better diagnostic tools and the study of the experimental pathogenicity and immunology of the disease.

In addition to the work on trachoma, the Organization is at present collating information obtained from Member States on blindness due to all causes. This will provide a basis for the development of activities in this wider field, and with this in mind collaboration with the International Association for Prevention of Blindness has been strengthened.

WHO was represented at the annual meeting of the International Organization against Trachoma, held during March in Mexico City, and collaborated in the preparation of the main report, on the treatment of trachoma. It was also represented at an international conference on trachoma sponsored by the Harvard School of Public Health, Boston, Mass., USA, in August, when experts from 10 countries reviewed the present situation and future trends.

Rickettsial Diseases

Louse-borne typhus remains endemic in parts of the highlands of Africa and South America. Several thousand cases have been reported in recent years from Ethiopia and, especially, Burundi, where WHO-assisted studies on the problem have now been completed and the experts' recommendations are being considered.

WHO-assisted research on rickettsiae and rickettsial diseases was continued at the Regional Reference Centres (at Bratislava, Czechoslovakia, and at Hamil-

ton, Mont., USA) and at a collaborating laboratory in Yugoslavia.

Veterinary Public Health

A continuing upward trend in the incidence of the zoonoses and food-borne infections was again apparent in most parts of the world where these conditions are kept under surveillance. This is due partly to better methods of detection but also to increases in animal production, in the movement of animals and animal products in international trade, and in tourism and nomadism. In their joint research and field work, FAO and WHO concentrated on specific problems arising from this situation.

Throughout the year the Organization continued, in collaboration with FAO, to assist governments in zoonoses control, food hygiene and the strengthening of epidemiological surveillance services, as well as in complementary educational and research work, WHO being largely concerned with the research side.

Research on spontaneous diseases of animals that are similar to or identical with diseases of man was further developed, and more attention was paid to the problems now arising in the use of laboratory animals.

Rabies

A most important aim of current research on rabies is the development of safer and more potent vaccines for post-exposure treatment in man. One major difficulty in the treatment of human rabies is that, because of the relatively low immunogenicity of the vaccines hitherto available, a long course of inoculations causing great discomfort and often having serious side-effects is needed. The highly concentrated and purified tissue-culture vaccine now being developed should lead to a radically improved treatment schedule. Experiments at the International Reference Centre for Rabies at Philadelphia, Pa., USA, and the Regional Reference Centre for Rabies in the Americas at Atlanta, Ga., USA, have shown that rhesus monkeys can be protected with only one injection of this potent vaccine. The results of this trial and plans for further immunological studies of the vaccine in man were discussed at consultations organized in co-operation with WHO at the Scripps Clinic and Research Foundation, La Jolla, Calif., USA.

At the Pan American Zoonoses Centre, Ramos Mejía, Buenos Aires, work has continued on the evaluation of reactions in man to vaccines in current use, with special emphasis on neuropathological effects following administration of the Fuenzalida vaccine prepared from suckling-mouse brain. It was

found that, in contrast to adults, children very rarely developed allergic encephalomyelitis following vaccination with Semple (nervous tissue) vaccine; their susceptibility to allergic neuritis after inoculation with the Fuenzalida vaccine was also somewhat lower than that of adults.

Work on diagnostic tests at the Centre included an evaluation of the corneal test for the laboratory diagnosis of rabies in live animals; it was found to have a sensitivity of 42 per cent. and a specificity of 97 per cent. Other results at the Centre suggest that tissue-culture systems for the isolation of rabies virus are made more sensitive if supplemented by diethylaminoethyl dextran.

The epidemic of wildlife rabies in Central Europe continued to spread slowly westwards at the rate of about 40 km a year. Foxes appear to be the principal vector, no independent rabies cycle having been found in other wild carnivores, such as stone-martens, weasels and stoats. The WHO/FAO co-ordinated research programme on wildlife rabies in Central Europe was reviewed at consultations held in Munich, Federal Republic of Germany, in July. The main purpose of this programme, which was started in 1969, is to determine whether wildlife rabies can be eradicated by controlling the fox population and without causing too severe a disturbance of the ecological equilibrium. Field studies are in progress in nine test areas of the five co-operating countries: Czechoslovakia, Denmark, the Federal Republic of Germany, the Netherlands and Switzerland. Results obtained so far suggest that the salivary excretion of rabies virus by apparently healthy foxes (indicating a carrier state), if indeed it exists at all, has no epidemiological significance. In a study area in Bavaria, attempts to isolate rabies virus from several hundred rodents have given negative results, apart from one isolation of a strain with the characteristics of street virus from a yellow-necked mouse (*Apodemus flavicollis*). In Czechoslovakia, strains resembling fixed rabies virus have been isolated from mice and voles of different species. These preliminary findings are at variance with those of numerous rabies surveys reported in the scientific literature; they are being re-examined in further studies, in which rodents trapped in selected areas are sent live to four institutes in different parts of Europe for comparative examination.

Ecological research on wildlife rabies is hampered by the lack of standardized techniques and thus of comparable data. Hunting statistics, where available, have provided the most useful information on the density of the fox population for long-term epizootiological investigations and for the planning and evaluation of operations for fox control.

A fuller account of the WHO/FAO co-ordinated research programme was published in the *WHO Chronicle*.¹

In the Region of the Americas a system of rabies surveillance is being developed by the Pan American Zoonoses Centre on the basis of monthly epidemiological data supplied by the participating countries. Ecological studies at the Centre on a large number of randomly caught vampire bats—the natural reservoir of rabies in Latin America—have shown that only a small proportion (0.75 per cent.) excrete demonstrable amounts of rabies virus in the saliva.

In March, the United Kingdom reported a case of rabies in a dog which showed the first symptoms eight and a half months after it had been imported and two and a half months after its release from quarantine. No case of rabies had occurred in the official quarantine station while the dog was detained there. A committee of inquiry on rabies set up by the Government of the United Kingdom to investigate quarantine problems of this kind visited WHO headquarters in June for discussions on the implications of prolonged incubation periods for the international transfer of animals and ways in which measures to prevent the importation of the disease might be improved.

Brucellosis

The Organization continued its work on brucellosis control, in collaboration with FAO. Reference services and training facilities were provided by the FAO/WHO Brucellosis Centres in various parts of the world (see Annex 6) and the Pan American Zoonoses Centre. These centres and various collaborating laboratories continued epidemiological investigations and research on practical problems of brucellosis control.

The Joint FAO/WHO Expert Committee on Brucellosis met in Geneva in June and reviewed the epidemiology, bacteriology, diagnosis, control and therapy of the disease in the light of the most recent advances, including the recognition of a species of *Brucella* (*Br. canis*) that infects both dogs and men, the development of supplementary and more rapid diagnostic tests and progress in research on more immunogenic and less agglutinogenic animal vaccines. Work in all these fields was continued with WHO support during the year.

The FAO/WHO Brucellosis Centre, Minneapolis, Minn., USA, and a collaborating laboratory in the United States of America have studied the characteristics of the newly described *Br. canis* and the infections it produces in man. At the same time, surveys of other species and biotypes of *Brucella*

¹ *WHO Chronicle*, 1970, 24, 47-52.

have been carried out in different areas. The WHO Brucellosis Centre, Moscow, typed the strains isolated from arctic foxes, wolves and wild reindeer in the far north of the Yakut Republic, USSR, as *Br. suis* biotype 4. A fifth type of *Br. suis*, found in sheep and cattle in France, has been described by a collaborating laboratory in that country.

Work on diagnostic tests showed that, in infections with *Br. melitensis* biotype 1, higher titres can be obtained in the agglutination test with homologous (*Br. melitensis*) antigen than with the commonly used heterologous antigen (*Br. abortus*), when both have been standardized against the international reference serum. It thus seems preferable to use the former antigen in areas where these infections are endemic. Further research on the indirect haemagglutination test has confirmed its sensitivity and specificity for the diagnosis of both human and animal brucellosis. Studies in collaborating laboratories have proved that the indirect fluorescent-antibody test is also specific and sensitive.

A rapid and easily read diagnostic test employing rose bengal stain and buffered antigen has been developed in the United States of America for screening large herds of cattle. Collaborating laboratories have found this test to be applicable in Asia and Europe and have extended its use to sheep.

Studies on animal vaccines were continued with the aim of finding an immunogenic product that would not cause serological reactions or interfere with control programmes based on serological tests. Trials in cattle of a live vaccine strain divested of its agglutinogens, which was prepared at a collaborating laboratory in France, gave satisfactory levels of short-term immunity. An inactivated adjuvant vaccine prepared from a non-agglutinogenic strain was tried in goats at the FAO/WHO Brucellosis Centre, Weybridge, England; it gave satisfactory protection against contact challenge but the degree of immunity was not so high as that given by the well-established Rev. 1 vaccine.

Leptospirosis

The WHO and WHO/FAO Leptospirosis Reference Laboratories and other collaborating laboratories continued to study the epidemiological, bacteriological¹ and serological² aspects of the disease and to work on the standardization of diagnostic tests. The WHO Leptospirosis Reference Laboratory in Moscow reported that in some study areas a shift from swine-borne infection with *Leptospira pomona* to cattle-borne infection with *L. gripp-*

typhosa was observed. A study of variable factors in the agglutinin-absorption test was completed and published in the *Bulletin*.³ The preparation and testing of reference sera for the identification of serotypes continued, and some were established as international reference reagents by the WHO Expert Committee on Biological Standardization that met in November.

Parasitic Zoonoses

Toxoplasmosis. In WHO-assisted collaborative studies in Denmark and Scotland, the complete life-cycle of *Toxoplasma* has been elucidated in cats. As a result, it is now known that the parasite is a sporozoan closely related to the coccidian genus *Isospora*, though serologically distinct from *I. bigemina*. The epidemiological importance of these findings is being investigated, and similar studies using other animals have been started.

Echinococcosis (hydatidosis). Studies on immunodiagnostic methods continued at the Pan American Zoonoses Centre and various collaborating laboratories. In experimental and field studies in northern Scandinavia and South America, modified Casoni antigens were shown to be sensitive diagnostic aids in epidemiological surveys; their specificity is now being examined critically. A fluorescent-antibody test using soluble antigen and freeze-dried scolices has been developed for the diagnosis of human hydatid disease.⁴

In co-operation with FAO, an inter-regional seminar on the control of echinococcosis was held in Buenos Aires in September; it was attended by participants and observers from 16 countries. The emphasis was on field control for the systematic elimination of the infection from large areas.

Cysticercosis-taeniasis. The problem of transporting viable embryophores (eggs) from an area in East Africa where cysticercosis-taeniasis is endemic to a collaborating laboratory in the United States of America has now been largely solved. As a result, it was possible for the laboratory to prepare a high-titre serum for the passive immunization of young calves in endemic areas during the first few months of life, when they are liable to develop tolerance if exposed to infection.

Collaborating laboratories in West Africa and the United States of America studied a number of purified cestode antigens including fractions obtained from *Taenia saginata* for use in the serological diagnosis of taeniasis and cysticercosis. Using these

¹ *Bull. Wld Hlth Org.*, 1970, 43, 571-577.

² *Bull. Wld Hlth Org.*, 1970, 43, 579-587.

³ *Bull. Wld Hlth Org.*, 1970, 42, 733-738.

⁴ *Bull. Wld Hlth Org.*, 1970, 42, 331-332.

antigens, satisfactory results were obtained with the indirect haemagglutination test in man, but there were non-specific reactions in cattle sera. It was decided to investigate ways of improving the effectiveness of the test in taeniasis.

Animal Influenza

A number of observations made during the year are consistent with the view that human influenza pandemics may have their origin in avian or animal reservoirs.

Active infections of pigs with the A2/Hong Kong influenza strain were reported for the first time in 1970, a number of herds in China (Taiwan), Hungary, and the United Kingdom being infected. The epidemiological implications in this finding for man are now being investigated.

Avian influenza was diagnosed in Asia for the first time when three strains of influenza A were isolated from ducks in Hong Kong. One strain is serologically related to a chicken strain isolated in Scotland and one to a turkey strain isolated in Wisconsin, USA, but the third has not yet been fully identified. A strain of influenza A isolated from a guinea-fowl in Hungary was found to be related to an Italian quail strain.

Antibodies to influenza A were found in seabirds on the coasts of Australia¹ and of the British Isles. In addition, surveys of dog sera in the United Kingdom and the United States of America showed that a small percentage of dogs from study areas in both countries had been infected with the Hong Kong strain during epidemics in man.

Collaborating laboratories in the United States of America have provided the first definite evidence of genetic interaction between mammalian and avian viruses *in vivo*, thus suggesting how the different viruses responsible for human pandemics may originate in nature. Two strains of animal influenza viruses were inoculated together into pigs and turkeys; "new" viruses with properties of both "parent" viruses were recovered, and these hybrids remained stable after passage.

A collaborating laboratory in Czechoslovakia reported on the experimental infection of weanling pigs with A/Swine influenza virus.² The occurrence of contact infections in susceptible weanlings placed with others that had been infected three months previously suggests the shedding of virus by the latter at some time during the fourth month following their experimental infection. Approximately one

year later, however, no virus could be recovered from the originally infected pigs nor from their offspring. There was some, but not very significant, serological evidence of infection in laboratory workers and animal handlers exposed to swine influenza virus during the studies.

Socio-economic Consequences of the Zoonoses

Problems arising in the study of the social and economic effects of the zoonoses in man and animals were explored in a series of consultations held during the year. This action was taken following the adoption by the Twenty-second World Health Assembly of resolution WHA22.35, emphasizing the waste of animal and human resources caused by the zoonoses and calling on WHO and FAO to elaborate methodology and criteria that could be used in the surveillance of this group of diseases and the evaluation of control programmes. The various significant factors in the principal zoonoses that have a bearing on the assessment of losses and on the cost-benefit analysis of control programmes have been defined and plans made for testing the proposed methods in a few selected areas.

Food Hygiene

The training of specialists in food hygiene continued in both developed and developing countries—in particular, through the FAO/WHO course on meat hygiene and abattoir development, held in Roskilde, Denmark. A seminar on food hygiene for health workers from the European Region was held in Warsaw (see page 151) and seminars on veterinary public health were held at Delhi and Mukteswar, India, and at Manila, with participants from the South-East Asia and Western Pacific Regions respectively (see also pages 144 and 165).

In the FAO/WHO food standards programme, work continued on matters directly related to the protection of the consumer's health (see also pages 96-97). Codes of hygienic practice are being drawn up for a great variety of food products, including those most frequently incriminated in outbreaks of food-borne disease, such as eggs, poultry and fresh and processed meats.

Progress has been made in work on acceptable microbiological standards for food, including the development of sampling methods and of techniques for examination and for the statistical evaluation of results. WHO has supported the work of several laboratories in this field,³ including those of the

¹ *Bull. Wld Hlth Org.*, 1970, **42**, 885-889.

² *Bull. Wld Hlth Org.*, 1970, **42**, 757-765, 767-770, 771-777.

³ *Bull. Wld Hlth Org.*, 1969, **41**, 297-306.

International Committee on Microbiological Specifications for Foods, which is drawing up statistical sampling plans for the most important foods in international trade. Tests for the determination and enumeration of micro-organisms in food have been published by the Committee and are being examined in WHO-supported inter-laboratory studies in order to establish the best method or methods in each case.

As a first step, the 14 collaborating laboratories in Canada, Denmark, France, Japan, the Netherlands, Sweden, the Union of Soviet Socialist Republics, the United Kingdom and the United States of America have reported on studies on the isolation of various *Salmonella* serotypes from samples of meat prepared and distributed by a single laboratory. The collaborating laboratories used the methods proposed by the Committee, as well as techniques of their own choice. The results so far suggest that the best enrichment medium was selenite brilliant green sulfathiazole broth incubated at 43°C. Of the plating media proposed by the Committee, brilliant green agar appeared to be the best. These studies are continuing with other food-borne pathogens and vehicles.

The Organization also supported work on botulism, including a survey of type E *Clostridium botulinum* in selected areas of Japan where, because of their diet, people are potentially exposed to the disease. By means of a highly sensitive passive haemagglutination test, minute amounts of the antitoxin were demonstrated in about 1 per cent. of the population under study.

On the recommendation of the first WHO consultation on food virology, held in Geneva in 1969, the Organization's programme in this field was expanded. At a second consultation, held in 1970, it was agreed that data on fresh meat and raw milk and on processed foods and final food products would be compiled by institutes in Czechoslovakia and the United States of America respectively.

A collaborating laboratory in the Netherlands has studied the detection of *Trichinella* infection in pork. The methods compared were the fluorescent-antibody test, the digestion method and trichinoscopy. All three methods proved suitable for demonstrating infections induced by 500 and 1500 larvae respectively, but ineffective for low-range (50 larvae) infections. In the critical range (150 larvae), none of the methods tested has so far proved superior to the others. Laboratories in five countries are collaborating in this project, and the results—particularly with the fluorescent-antibody test—have varied considerably from one laboratory to another.

The same laboratory in the Netherlands has completed a survey of the occurrence of *Vibrio parahaemolyticus* in fish and shellfish marketed in that country. The contamination rate—approximately 0.3 per cent.—accords with that for fish landed in the north of the Federal Republic of Germany. It therefore seems that the pathogenic agent in question is not as widespread in European countries as it is, for example, in Japan, where it is responsible for more than two-thirds of food poisoning cases.

A collaborating laboratory in Czechoslovakia completed studies on the transmission of *Mycobacterium avium* in foods. It was shown that, under certain conditions, this organism may survive in processed foods that have been heat-treated at temperatures in the range of 60°C-70°C.

Comparative Medicine

In order to facilitate epidemiological studies and international exchange of information on animal diseases of possible relevance to human disease, the Organization has for some time been processing data on animal diseases from selected clinics and departments of pathology in Czechoslovakia, the Federal Republic of Germany, Poland and the United Kingdom. A centre in Australia joined this programme during 1970.

A WHO Scientific Group on Health Aspects of the Supply and Use of Non-Human Primates for Biomedical Purposes met in Geneva in September. Monkeys and apes are being used for an increasing range of biomedical purposes for which they are specially valuable because of their phylogenetic relationship to man. On a number of occasions, however, people handling these animals or their tissues have contracted disease: one of the worst incidents of this kind occurred in the Federal Republic of Germany in 1967 when 26 people became seriously ill and seven of them died. It is widely recognized that greater supervision should be exercised over the laboratory use and handling of imported primates, and some national authorities have sought guidance in this matter from WHO. The Scientific Group reviewed the situation and drew up a series of recommendations aimed at safeguarding the health of the laboratory staff, improving the health and quality of monkeys and apes provided for laboratory use and ensuring an adequate supply of suitable animals for biomedical purposes. The Scientific Group also recommended that the large-scale breeding in captivity of primates for laboratory use should be encouraged.

On the occasion of the Sixth International Immunopathology Symposium, held at Grindelwald, Switzerland, in September, informal consultations were held

on ways in which WHO might promote the further study of animal models of diseases in which auto-immunity plays a part and on the application of knowledge in this field to human health problems.

Good progress has been made in WHO-supported comparative studies of spontaneous tumours in domestic animals and man. Cancers of the oesophagus and of the urinary bladder in cattle were reported in parts of Kenya where they had not previously been observed and where cancer of the oesophagus also occurs in man. Unlike most places where cancer of the bladder is found in cattle, the areas affected are free from bracken fern (*Pteridium esculentum*), so other causes must be sought.

A collaborating laboratory in Denmark has carried out a successful programme, based on haematological analyses, for the control of bovine lymphosarcoma; the feasibility of extending the programme to dogs and cats is now being investigated. In Scotland, the collaborating laboratory where the virus causing cat leukaemia was first demonstrated and isolated has now found that this virus is associated with, and probably responsible for, several other diseases and related lymphoid depletion leading to a high incidence of intercurrent infection, anaemia and glomerulonephritis. A method of enhancing the resistance of mice to experimental tumours by the injection of certain bacterial extracts has been developed by a collaborating laboratory in France and is now being tried out in human cancer.

Collaborating laboratories in Switzerland, the United Kingdom and the United States of America have continued and extended comparative investigations on various aspects of cardiovascular disease. A systematic clinical screening has been undertaken to detect dogs with essential hypertension; when a sufficient number of them have been found, the genetics and pathogenesis of the condition will be investigated. Considerable progress has been made in studies of the genetics and morphogenesis of several types of congenital abnormalities of the heart and great vessels in dogs, and it has been found that they are not inherited as fully penetrant single-gene traits. Progress has also been made in elucidating the mechanisms controlling closure of the ductus arteriosus both in normal

dogs and in dogs selectively bred for predisposition to patent ductus. An experiment designed to show whether the drinking of hard or soft water has any effect on the development of atherosclerosis in *Cebus* monkeys is nearing completion. At one collaborating laboratory, two strains of squirrel monkeys have been developed by selective breeding, the first being susceptible to atherosclerosis and the second resistant to it; the potential value of these animals in research is obvious. A new programme has been started on the interrelationship between hypertension, arteriosclerosis and gastric ulcers in pigs; it includes behavioural and genetic studies and is an expansion of recently published¹ collaborative work on coronary, aortic and cerebral atherosclerosis in swine.

Comparative virology. An informal consultation was held in Geneva in November to review the WHO/FAO co-ordinated programme of animal virus characterization and plan future activities. As part of this programme, in which more than 50 laboratories are collaborating, a number of virus strains for reference purposes have been selected by nine international working teams, each dealing with a different group of viruses. Some antisera, prepared in laboratory-bred animals in the United Kingdom, are undergoing examinations for stability, potency and sterility with a view to their recognition as reference reagents. WHO has made additional plans for the establishment of centres to collect data on animal viruses and for the standardization of laboratory techniques for the diagnosis of the diseases they cause.

Comparative studies on simian herpes viruses were started in collaboration with an institute in the United States of America, where antisera against 75 isolates belonging to different virus groups have been prepared.

A collaborating laboratory in Switzerland reported the isolation of a respiratory syncytial (RS) virus of bovine origin; a close antigenic relationship between this agent and human RS viruses has been demonstrated in both cross-neutralization and complement-fixation tests. The relatively high pathogenicity of the bovine RS virus was demonstrated in laboratory-bred calves in the United Kingdom.

¹ *Bull. Wld Hlth Org.*, 1970, 42, 225-234.

CHAPTER 2

COMMUNICABLE DISEASES

(Continued)

Malaria

Revised Strategy of Malaria Eradication

During 1970, in accordance with resolution WHA22.39 of the Twenty-second World Health Assembly, which recommended that governments of countries with malaria programmes under way revise them in co-operation with the Organization and the other assisting agencies "with a view to adapting them to a strategy calculated to give optimum results", multidisciplinary reviews of antimalaria programmes were carried out in a number of countries with the collaboration of WHO and other agencies. These reviews involved a realistic appraisal not only of the technical but also of the logistic, administrative and financial aspects of each programme so that any replanning needed might be adjusted to the particular situation in the country concerned. For this purpose, the Organization has developed general guidelines covering planning procedures, programme implementation, requirements for public health services, socio-economic factors and the classification of areas on the basis of epidemiological response to malaria. The recruitment of review teams inevitably involves some delay, since they should include not only entomologists, malariologists, public health administrators and epidemiologists, but also such additional specialists as management consultants, health economists and public health engineers.

In the Region of the Americas, UNICEF, the United States Agency for International Development (AID) and the Pan American Health Organization have co-operated with the Governments of Costa Rica, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua and Panama in reviews of factors impeding progress in the eradication programmes of these countries. In El Salvador, Guatemala, Honduras and Nicaragua the chief obstacle was considered to be vector resistance to halogenated hydrocarbon insecticides, and the intensive use of the carbamate insecticide propoxur (OMS-33) was recommended, in spite of its high cost.

Similar reviews were undertaken in Afghanistan, with the assistance of UNICEF and WHO, and in Ethiopia, where the co-operating agencies were AID

and WHO. Alternative plans permitting the programme to be implemented in stages were recommended for Afghanistan, and it was considered that in Ethiopia priority might well be given to intensive antimalaria operations in agricultural and other development areas. Reviews in the Philippines and Thailand have shown the need for concentrating efforts in certain areas and limiting operations to malaria control where a time-limited eradication programme is impracticable with present resources.

Reviews of their programmes were also carried out by the Governments of India, Nepal and Pakistan in collaboration with AID and WHO. For the programme in India, it was recommended *inter alia* that the normal time phasing should not apply in areas of persistent transmission—which should be considered separately and where activities should be intensified—and that the malaria service should continue to be responsible for vigilance operations until the general health services can assume full responsibility. In Pakistan the review covered only the western provinces; it was recommended that the programme should not have a pre-determined time limit, although it should continue to receive high financial priority, and that an attempt should be made as soon as possible to start to integrate the malaria service into the general health service. A review of the programme in the Territory of Papua and New Guinea was in progress at the end of the year.

The WHO Expert Committee on Malaria, which met in October, reviewed the principles and practices of malaria eradication in the light of field experience, with particular reference to the revised strategy.

The Committee recommended that the Organization should continue its support for malaria eradication programmes and, whenever eradication is not at present feasible, should also support malaria control as a necessary and valid step towards that ultimate goal.

In view of the difficulties experienced in such matters as staffing, timing and the integration of mass disease campaigns in the general health services, the Committee recommended that special organizational studies should be undertaken. It also endorsed the efforts now being made by the Organization to develop methods for evaluating the social and economic effects of malaria and of its eradication or control.

Progress of Eradication Programmes

Despite some setbacks, progress was maintained in the majority of malaria eradication programmes in 1970. Five more countries and territories were entered in the WHO official register of areas where malaria eradication has been achieved, bringing the total to 18. In another 19, eradication has been claimed, but not yet registered. WHO assisted 43 countries and territories with their eradication programmes (seven were carrying out similar programmes without direct assistance from WHO) and 28 with other antimalaria work, including surveys and control programmes.

On 30 September 1970, of the estimated 1802 million people living in the originally malarious areas of the world,¹ 1340 million (74 per cent.) were in areas where malaria had been eradicated or where eradication programmes were in progress. Of these, 710 million (39 per cent. of the population of the originally malarious areas) were living in areas in the maintenance phase,² 296 million (16 per cent.) in areas in the consolidation phase, 329 million (18 per cent.) in areas in the attack phase, and five million (less than 1 per cent.) in areas in the preparatory phase. Of the 462 million people (26 per cent.) living in areas where eradication programmes were not yet in operation, 113 million were benefiting from malaria control measures, while governments were making an organized effort to ensure that antimalaria drugs were available as a control measure to a further 62 million.

In the African Region, the emphasis continued to be on the development of basic health services including the training of staff in antimalaria operations. In addition, governments were assisted in malaria surveys (for example, in Chad, the Democratic Republic of the Congo, Nigeria and Upper Volta) and in limited control operations (as in Cameroon, Senegal and Togo, where selected groups were protected by mass drug administration). Special antimalaria measures were included in lake development projects assisted from the Special Fund component of the United Nations Development Programme (UNDP) in Ghana, the Ivory Coast and Nigeria.

In the Region of the Americas, areas in Peru with a total population of 320 000 were advanced from the

consolidation to the maintenance phase, while in Argentina and Brazil areas with populations of 850 000 and 2 000 000 respectively were advanced from the attack to the consolidation phase. In Cuba, all areas originally exposed to the risk of malaria have entered the maintenance phase. In the Central American Republics of El Salvador, Guatemala, Honduras and Nicaragua, the carbamate insecticide propoxur (OMS-33) is being introduced for large-scale operations. In the Dominican Republic, which is now almost completely free from the disease, small foci of malaria were detected in an area bordering on Haiti, in some parts of which *Anopheles albimanus* is resistant to DDT.

In the South-East Asia Region, increased assistance (particularly for the training of personnel) was provided to Ceylon, where total coverage with insecticide spraying has not yet been achieved and transmission still continues. In India, areas with a population of 2 710 000 advanced from the attack to the consolidation phase and areas with a population of 3 270 000 from the consolidation to the maintenance phase. In Thailand, the Organization assisted research into the causes of persisting transmission in certain land reclamation areas. In Indonesia, a special effort was made to consolidate the gains already made; the programme was replanned as a control programme, spraying was carried out on a wider scale than in 1969, and in some areas larvivorous fish were being introduced to reduce the vector population; and in West Irian, the Organization assisted a survey of the malaria situation and advised on malaria control measures that would suit local conditions. In the Maldives, antimalaria operations, which come under the general health service, were extended to certain areas not previously covered.

The three antimalaria programmes in the European Region—in Algeria, Morocco and Turkey—continued to make progress. In Algeria, the attack phase was extended to areas with a population of more than half a million persons at risk. In Morocco, spraying was carried out in 10 provinces and larvivorous fish were introduced as a control measure in selected areas. In the south-eastern part of Turkey, where DDT was partly replaced by dieldrin, transmission was significantly reduced.

In the Eastern Mediterranean Region, Israel and Lebanon remained free from local transmission, only a few imported cases being reported. The Organization assisted Israel in an epidemiological evaluation in certain areas. Good progress was made in Libya, where no indigenous case was reported. In Iraq, owing to the resistance of *Anopheles sacharovi* to DDT and dieldrin, malathion is being increasingly used. In Sudan, the Organization helped the Govern-

¹ Excluding China (mainland), North Korea and North Viet-Nam.

² A malaria eradication programme is divided into four phases: the preparatory phase, characterized principally by geographical reconnaissance and training of staff; the attack phase, during which total coverage house-spraying or other attack methods are applied; the consolidation phase, during which these attack measures have ceased and surveillance is carried out; and, lastly, the maintenance phase, during which vigilance operations aim at preventing the re-establishment of the disease.

ment with the replanning of malaria control activities, while in the People's Democratic Republic of Yemen antilarval operations were recommended after a malaria survey.

In the Western Pacific Region, a malaria eradication plan, phased over 10 to 14 years, has been put into operation in West Malaysia where further areas have entered the attack phase. Following a review of the programme in the Philippines (see page 27), malaria control activities have been introduced in areas where a time-limited eradication programme is not at present feasible. The pre-eradication programme in the British Solomon Islands Protectorate was converted to an eradication programme during 1970. In Laos, mass drug administration was carried out in the Mekong Valley to protect the local population and labourers working on dam sites. In the Republic of Korea, anti-malaria operations were carried out by the staff of the general health services.

Research

Between January and November 1970, WHO concluded 40 new or renewed agreements with national institutes for studies on parasitology, chemotherapy, immunology, epidemiology, entomology and methodology of attack in relation to malaria.

The search for more rapid and sensitive techniques for the epidemiological evaluation of malaria has continued, with special emphasis on ways of improving the microscopic examination of blood slides, particularly where parasitaemia is scanty. Fluorochrome staining with acridine orange has been shown in the laboratory to be a reliable method that permits the rapid detection of parasites even at very low levels of parasitaemia, but its value in the field has yet to be confirmed. Tests in Ceylon and Pakistan have suggested that the use of the wide-angle lens may make for greater efficiency in blood-slide examination.

Alternative epidemiological techniques include the indirect fluorescent-antibody test, which is being used in Tunisia in a longitudinal study of malaria, undertaken with the assistance of an institute in France, and promises to be an extremely useful supplement to more traditional methods. In Trinidad and Tobago, the indirect haemagglutination test has been used to survey the immune response of the population to malaria infection. This test also appears to be a promising epidemiological tool, as it is malaria specific and sufficiently sensitive to demonstrate circulating antibodies over a long period.

While many technical problems have to be solved before safe and effective immunization against malaria becomes a reality, definite progress was made in 1970 in studies of the immune response in malaria and in the

application of the immunological technique to the disease. Two developments were of special importance: the demonstration, in an *in vitro* trial in the United Kingdom, of the inhibiting action of humoral immunity on the multiplication of plasmodia, and the preparation in Italy, using a special cell fractionator, of an antigen capable of protecting laboratory animals against infection with a homologous strain for a period of 90 days. Similar experiments are in progress in France, the Netherlands and the United States of America.

Studies in France¹ of the mechanism of the immune response in malaria have thrown further light on the stimulation of the phagocytic activity of the reticulo-endothelial system with irradiated *Plasmodium berghei* as antigen. The part played in the immune response by lysosomal enzymes of the spleen has been elucidated in Romania.

A consultation was held in Geneva in December 1970 to establish procedures for the preparation of antigen for malaria immunization. Whether sporozoites or erythrocytic schizonts are used as antigen sources, large quantities will be needed. It is therefore essential to find more efficient ways of cultivating plasmodia *in vitro*. Research on the *in vitro* cultivation of tissue forms of plasmodia in a perfusion system, with the aim of obtaining secondary generation, has continued in the United States of America, but with little success so far. During 1970, studies on the metabolism of plasmodia *in vitro* were undertaken in Colombia, the Federal Republic of Germany and the United Kingdom.

The cross reactivity between rodent plasmodia and babesia has been confirmed in the United Kingdom² by means of the indirect fluorescent technique. This study has once again shown that IgG immunoglobulin as a conjugate provides the best binding mechanism for malaria antibodies. In France and the People's Republic of the Congo, field and laboratory research is being carried out on rodent plasmodia to ascertain the possible existence and growth of secondary generations of the endothelial (tissue) forms.

An important development in work on simian malaria occurred during 1970 when, for the first time, *Anopheles cruzi* was confirmed as the vector of *P. simium* in Brazil; in addition, a specimen of *A. elegans* with sporozoites suspected to be of simian origin was found in Ceylon.

Observations on the North Korean strain of *P. vivax* made by the WHO Regional Reference Centre for Malaria at Epsom, England, in collaboration with research workers in Romania, suggest that the

¹ Bull. Wld Hlth Org., 1970, 42, 163-168.

² Bull. Wld Hlth Org., 1970, 43, 341-344.

duration of the incubation period is affected by the sporozoite dosage, i.e., the lower the dosage, the longer the incubation period.

A study of the relationship between glucose-6-phosphate dehydrogenase (G6PD) deficiency and malaria, based on a haemoglobin survey of almost 2000 children, was carried out at Ibadan, Nigeria. The results suggested that neither abnormal haemoglobin traits—apart from the sickle cell trait—nor G6PD deficiency alone confer protection against malaria, though they may do so in combination. On the other hand, laboratory studies in the United Kingdom have shown that G6PD activity does not occur in the parasite, but is restricted to the erythrocyte. As the parasite depends on the G6PD activity of the pentose phosphate pathway for growth, it is unlikely to thrive or even survive in G6PD-deficient erythrocytes, so that G6PD-deficient individuals are less liable to malaria infection than others.

In the field of chemotherapy, two 6-aminoquinolines synthesized in the Federal Republic of Germany, and already tested against rodent plasmodia with promising results, were tested against simian plasmodia in the United Republic of Tanzania and the United States of America. Further compounds, mainly biguanides and amidine ureas, were synthesized in Poland and are being tested against rodent plasmodia at the WHO Regional Reference Centre for Screening of Potential Antimalarial Compounds, in Liverpool, England.

Studies on the mechanism of chloroquine resistance were continued in the United Kingdom and in the Union of Soviet Socialist Republics, where morphological changes in a resistant line of *P. berghei* were reported. In the United Kingdom, small doses of chloroquine were administered to two old strains of *P. berghei berghei* that had been maintained in albino mice by injection of infected blood for nearly 20 years and were producing no gametocytes. The treated lines have started to produce abundant gametocytes and are being regularly maintained by cyclical transmission. In another strain of *P. b. berghei*, in which moderate resistance to chloroquine had been developed, increased gametocyte production was observed. This phenomenon, if observed in other species, may be of epidemiological significance.

The high susceptibility of *P. falciparum* to chloroquine has been confirmed in the United Republic of Tanzania,¹ in an area where the drug was used prophylactically for more than seven years. This study showed the value of the eosin colour test for determining chloroquine uptake and excretion in the field.² The

long-term effects of chloroquine on the eye were investigated in the same area by experts from the Netherlands, with WHO assistance; examinations of over 500 persons, employing the most up-to-date techniques, have so far revealed no adverse effects.

The existence of indigenous *P. ovale* infection outside Africa, originally reported from the Philippines, has been confirmed by evidence of four cases of *P. ovale* infection in continental South-East Asia.³

In the field of entomology, further experience was gained with light-traps in Kenya, Nigeria⁴ and Upper Volta; the CDC trap was found to be reasonably efficient in sampling the house-visiting population of *Anopheles gambiae*, but even more efficient for *A. funestus*. In Romania, the design of the WHO "multiple response test box" has been improved, criteria for interpreting the results have been established and modified test conditions and procedures proposed. Further work on sibling species from Togo and Upper Volta has shown that DDT resistance in *A. gambiae* depends on a single dominant, or partially dominant, genetic factor. Crossing experiments were carried out on *A. funestus* from Ethiopia, Ghana, Kenya, Nigeria and Upper Volta, and on *A. albimanus* from El Salvador, Haiti, Panama and Venezuela, but no evidence of hybrid sterility was obtained.

Statistical studies at the WHO International Reference Centre for Maintenance and Distribution of Standardized Strains of *Anopheles*, in London, have resulted in the elaboration of a new model for the mass release of sterile male hybrids of the *A. gambiae* complex, which could be used in field trials.

Studies on genetic factors influencing the capacity of *Anopheles* mosquitos to transmit plasmodia have been carried out in Italy. It was found that the refractoriness of *A. stephensi* to infection with *P. gallinaceum* depends on a single Mendelian dominant, while receptivity to the infection is controlled by an autosomal pair of genes.

The role of the sibling species of *A. gambiae* in the transmission of malaria was studied in the United Republic of Tanzania. Preliminary results, based on a significant sample of mosquitos collected in localities where populations of both species co-exist, indicate that species A is primarily responsible for the transmission of malaria. In fact, sporozoites have been found only in species A so far.

In Greece, studies on the bionomics of *A. sacharovi* continued in an area where this species has developed resistance to DDT, but where spraying was with-

¹ Bull. Wld Hlth Org., 1970, 42, 471-477.

² Bull. Wld Hlth Org., 1970, 42, 477-479.

³ Bull. Wld Hlth Org., 1970, 42, 399-403.

⁴ Bull. Wld Hlth Org., 1970, 43, 635-641.

drawn a few years ago; the high degree of resistance was confirmed as a stable characteristic.

The possibility of interrupting malaria transmission in savanna areas of Africa will be the subject of a large-scale field research project in Northern Nigeria. During 1970, much of the preparatory work for this project was completed, including geographical reconnaissance and the collection of certain basic parasitological and entomological data. The general plan of operations and procedures for the necessary entomological, parasitological and immunological investigations have been worked out.

Training in Malaria Eradication

During 1970, the International Malaria Eradication Training Centre in Manila organized two general courses for professional staff, as well as courses in epidemiology for professional staff and in parasitology, entomology and epidemiology for senior sub-professional staff. In addition, a special course was held for public health officers and rural health workers. Most of these courses were sponsored by WHO, and the participants came from countries in the South-East Asia, Eastern Mediterranean and Western Pacific Regions. Teachers from the Centre also conducted orientation courses in malaria for general health staff in Malaysia, at Kuala Lumpur, and in the Territory of Papua and New Guinea.

The training centre in Maracay, Venezuela, continued to be used for the instruction of professional staff from the Spanish-speaking countries of the Region of the Americas.

The national training centres in Algeria, Brazil, Ceylon, Ethiopia, India, Iran, Malaysia, Mexico, Pakistan, the Philippines and Sudan held a number of courses, mainly for operational staff, in close co-operation with the Organization. In several other countries, courses were held for workers in national malaria eradication programmes, technical advice being provided by WHO.

In Lagos, a three-month course on antimalaria techniques was attended by health workers from Botswana, Ghana, Liberia, Malawi, Nigeria, Sierra Leone, Swaziland and Uganda. A similar course was held for supervisory staff of health centres, with participants from Ghana, Kenya, Nigeria, Uganda and Zambia.

Co-ordination

At its meeting in February, the UNICEF/WHO Joint Committee on Health Policy considered future assistance to antimalaria projects in the light of the revised strategy of malaria eradication. The Organization also held discussions on the subject with the

United Nations Development Programme and the United States Agency for International Development (AID), and a joint WHO/UNICEF/AID/United States Public Health Service co-ordination meeting on malaria took place in Washington, D.C., in November. The meeting discussed, *inter alia*, the consequences on external assistance of the recommendations made by strategy review teams and the policies of the assisting agencies in providing aid for malaria programmes.

During 1970, with assistance from the United Nations Development Programme advisory services were provided for 10 malaria programmes and seven programmes for the development of basic health services in Africa. UNICEF furnished supplies for 23 malaria eradication programmes (17 in the Americas) and also for the development of rural health services. Substantial assistance to 19 malaria eradication programmes and to the International Malaria Eradication Training Centre in Manila was given by AID. In El Salvador and Thailand, two AID-assisted research stations collaborated in the national malaria eradication programmes.

The Organization assisted a number of inter-country co-ordination meetings on malaria. These included: border meetings between Brazil and Guyana, British Honduras and Mexico, Colombia and Ecuador, Colombia and Venezuela, India and Pakistan, Iran and Iraq, Jordan and Saudi Arabia, and Malaysia and Thailand; a working group for the co-ordination of malaria eradication programmes in Central America and Panama; a meeting of the co-ordination committee on antimalaria activities in North Africa; and meetings of the inter-country malaria eradication co-ordination boards for Burma, India and Pakistan, and for Jordan, Lebanon, Syria and Turkey.

Other Parasitic Diseases

Development schemes, particularly for the promotion of agriculture and the management of water resources, often create conditions that can favour the spread of certain diseases. Thus, in 1970, WHO received an increasing number of requests for technical advice on the health aspects of projects such as those carried out under the Special Fund component of the United Nations Development Programme. The Organization undertook surveys in several project areas, particularly in Africa, to obtain a general picture of the epidemiological situation and ascertain the effect of the projects on the prevalence of water-related parasitic diseases and on their control.

The ecological changes brought about by the creation of artificial lakes, the management of large river systems and rapid urbanization are far-reaching in their effects, so that epidemiological surveys in

development areas must be of a predictive character. The Organization is planning research on the long-term risks involved and on measures to counteract them from the outset.

To be effective and economical, operations for the control of vector-borne diseases should cover the whole of a naturally delimited ecological area. This may require the co-operation of several countries, as in West Africa, where seven countries are concerned in a proposed programme for onchocerciasis control in the Volta river basin. Control on such a large scale demands the use of labour-saving techniques, such as aerial insecticide spraying, which has been successfully tried out against tsetse flies and blackflies.

During 1970, the search for new drugs against parasitic diseases was intensified, with special emphasis on laboratory screening in experimental models and on field trials of promising compounds for the treatment of schistosomiasis and certain other helminthic infections.

In addition to regional training activities, on which increasing emphasis is being placed, an inter-regional training course on the serological diagnosis of parasitic diseases was organized by WHO, with the collaboration of the United States Public Health Service, at the Center for Disease Control, Atlanta, Ga., USA, in November 1970.

Schistosomiasis

The spread of schistosomiasis in the wake of projects for the management of water resources continues to be a serious risk in a number of developing countries. Preventive work has so far concentrated mainly on irrigation schemes, as it is well known that they play a part in increasing the prevalence and severity of the disease, but it is becoming clear that artificial lakes and water impoundments present a similar danger. Thus the intermediate snail hosts *Biomphalaria* and *Bulinus* have been found in areas adjacent to the Kainji (Nigeria) Lake Research Project and in the new lake itself. Unfortunately, little is known as yet of the ecological conditions created by such projects and the specific control techniques required.

In July, WHO accordingly convened an informal group of specialists in snail ecology to discuss schistosomiasis transmission in man-made lakes and recommend an appropriate research programme. The Organization also requested the support of the United Nations Development Programme for research on the epidemiology and methodology of schistosomiasis control in man-made lakes—the Volta Lake, Lake Nasser and other large artificial lakes in Africa.

Long-term investigations on the pathology of *Schistosoma haematobium* and *S. mansoni* infections

have been pursued. In Nigeria, radiological follow-up studies have confirmed the reversibility, after treatment, of obstructive uropathy in children with urinary schistosomiasis. In Brazil, longitudinal studies have continued on clinical and pathological manifestations in human cases with hepatosplenic involvement; a parallel study is being conducted to evaluate antibody levels during the evolution of the disease.

At a consultation in Geneva in June, information on immunopathological manifestations in schistosomiasis was reviewed and guidelines for a co-ordinated research programme were drawn up.

Studies on the immunological and serological aspects of schistosomiasis infection have continued. At an institute in Belo Horizonte, Brazil, it was found that a substance isolated from *S. mansoni* cercariae and not yet chemically characterized was 25 times more active than the total extract as an antigen in skin tests. At a laboratory in London, it was shown that previous exposure of cattle to *S. mansoni* reduced the severity of bovine schistosomiasis in endemic areas. Hybridization studies at the same laboratory have shown different types of genetic incompatibility among the five African schistosome species involved.

Large quantities of adult and cercarial forms of *S. mansoni* have been freeze-dried at Belo Horizonte, mainly for the preparation of a reference schistosome antigen for the comparative study of various serological tests.

Work in the field of chemotherapy has been mainly concerned with the action of certain chemicals on schistosomes and with clinical trials of promising compounds. Metrifonate, an organophosphorus cholinesterase inhibitor, has given promising results in the treatment of *S. haematobium* infection and other helminthic infections. A clinical trial to ascertain its value in urinary schistosomiasis and in hookworm infection was undertaken by the Bilharziasis Chemotherapy Centre, in Tanga, United Republic of Tanzania, which is sponsored by the Tanzanian Government, the Medical Research Council, London, and WHO. In addition, two consultations were held: one in Mexico City, in September, on recent advances in the chemotherapy of intestinal helminths and schistosomiasis, with special reference to organophosphorus compounds; the other in Geneva, in October, on the evaluation of trials with metrifonate against *S. haematobium* infection.

Other drugs tested in WHO-sponsored clinical trials included hycanthone, which gave a cure rate of over 90 per cent. in the treatment of *S. mansoni* infection at Belo Horizonte, and promising results against *S. haematobium* infection at the Bilharziasis Chemotherapy Centre in Tanga.

WHO continued to support research projects on the ecology, physiology, biochemistry and immunochemistry of the snail intermediate hosts of the disease. Laboratory and field studies on the biology and ecology of *Biomphalaria choanomphala* and *B. sudanica*, the hosts of *S. mansoni* in Lake Victoria, have been started in Mwanza, United Republic of Tanzania (see page 125). The inter-regional schistosomiasis research team completed studies in Nigeria on the population dynamics and seasonal infection rate of *Bulinus globosus*. A laboratory in London succeeded in standardizing a technique for the investigation of snail aromatic stearyases, which may prove a useful tool in snail taxonomy and studies of host-parasite relationships. At another laboratory in the United Kingdom, snail responses (e.g., growth, reproductive rates, patterns of aggregation, etc.) were shown to be conditioned to a great extent by environmental factors such as population density, hydrochemical conditions, light and water flow. In the Netherlands, detailed investigations on the physiology and ultrastructure of the snail integument revealed the fundamental role of transport of the epidermal cells in fluid exchange, the occurrence of some fluid exchange through the intercellular space and the uptake of sodium ions by the snail.

Encouraging results in the WHO programme for the screening and evaluation of molluscicides were reported by collaborating laboratories in several countries. The compound *N*-tritylmorpholine was successfully used as a molluscicide on sugar estates in Ethiopia and the United Republic of Tanzania, while the ethanolamine salt of niclosamide proved satisfactory in the control of *Biomphalaria glabrata* in Brazil.

A meeting of directors of laboratories collaborating in molluscicide testing and evaluation was held in Washington, D.C., in August. Its main purpose was to see how co-ordination between the laboratories concerned could be improved. The role of the chemical industry in the programme was also discussed, as well as ways of increasing the speed and efficiency of molluscicide evaluation.

Several papers on various aspects of schistosomiasis were published in the *Bulletin*.¹

Filariasis

Much WHO-supported research on filariasis is of a long-term nature. The investigation of host-parasite relationships continues to receive special attention, since it may lead to the establishment of laboratory models and to the explanation of such phenomena as host susceptibility and resistance to filarial parasites.

During 1970, a WHO-assisted study on the passage of microfilariae through the stomachs of mosquito vectors was continued at a laboratory in Paris. In an investigation using microfilariae of *Wuchereria bancrofti* and *Setaria labiatopapillosa* in *Aedes aegypti*, the number that succeeded in reaching the haemocoel appeared to bear no relation to the number ingested, whereas in *Anopheles* vectors the number of microfilariae reaching the haemocoel is proportional to the number ingested; it is possible that in *Aedes* there is some barrier, such as a peritrophic membrane, that would account for the differences observed. In another investigation, it was shown that the mortality observed in filaria-resistant vectors is due to the destruction of the digestive epithelium as a result of the intraepithelial migration of the microfilariae.

The same laboratory conducted studies on the determination of filarial subspecies. Factors being investigated include newly-found characters in microfilariae, such as the cephalic crochets, and differences in the development rate of the larval stages and in the time required for certain significant embryonic cells to divide.

In the United Kingdom, different geographical strains of *Culex pipiens fatigans* are being tested against the corresponding local strains of *W. bancrofti*, against *Brugia pahangi* maintained in the investigating laboratory, and against a strain of *W. bancrofti* from Djakarta. Initial tests have shown *C. p. fatigans* from Malaysia, Nigeria, Upper Volta and Venezuela to be refractory to the *B. pahangi* strain. In a study in the same laboratory on the survival patterns and development of *B. malayi* and *B. pahangi* in susceptible *Aedes aegypti*, over 70 per cent. of the microfilariae of *B. pahangi* reaching the thorax developed successfully, whereas less than 25 per cent. of the *B. malayi* microfilariae reaching the thorax survived to the infective stage.

In Tananarive, strains of *C. p. fatigans* from Madagascar (east coast and Tananarive) and the island of Grande Comore in the Comoro Archipelago were infected experimentally with equal amounts of *W. bancrofti* microfilariae from Madagascar (east coast) and Grande Comore. The results, obtained under identical experimental conditions, point to strain differences in the infectivity of the parasites, as shown by development in the same vector, and to differences in the susceptibility of vector strains infected with the same parasites.

Several West African strains of *Anopheles gambiae* A (Ivory Coast, Upper Volta), *A. gambiae* B (Upper Volta), *A. melas* (Liberia) and *A. funestus* (Upper Volta) were successfully infected with *W. bancrofti* in the laboratory of a WHO-supported institute based in Upper Volta. In the dry Sudan savanna zone of

¹ *Bull. Wld Hlth Org.*, 1970, **42**, 569-574, 575-580, 581-588, 589-596, 597-612.

the same country, field surveys on the distribution of filariasis and on variations in microfilaraemia were carried out in conjunction with studies on transmission at different times of the year.

Epidemiological surveys and evaluations are an important feature of the Organization's filariasis programme. The above-mentioned institute in Upper Volta has reported on surveys in a focus of Bancroftian filariasis in southern Dahomey and Togo. The frequency of clinical filariasis bore no relation to the prevalence of infection, and elephantiasis and hydrocele were found in places where the parasite apparently did not exist. In entomological surveys, 22 species or groups of species were caught, of which five were naturally infected with filariae: *Anopheles gambiae*, *A. funestus*, *A. pharoensis*, *Mansonia africanus* and *M. uniformis*. Of these, *A. gambiae* appeared to be a certain vector, *A. funestus* a probable vector, and *A. pharoensis* a secondary vector.

As part of the WHO inter-regional programme of field investigations on filariasis, the epidemiological situation in the French overseas department of La Réunion has been studied. It was found that, as a result of consistent treatment of individual cases by the local health services over the past decade or so, transmission of *W. bancrofti* has been interrupted even though the population of *Culex pipiens fatigans*, the main vector, has remained at more or less the same level. This is a rare example of the interruption of transmission by such means in an area of relatively mild endemicity.

Studies of promising chemotherapeutic agents, using multimammate rats (*Mastomys natalensis*) infected with the filarial parasite *Litomosoides carinii*, were pursued at an institute in the Federal Republic of Germany. Results with a basically substituted 2,6-bis-benzimidazole derivative administered subcutaneously were found to compare favourably with those obtained with diethylcarbamazine (the current drug of choice) administered orally, a reduction of over 90 per cent. in the microfilaria count being achieved as rapidly as with diethylcarbamazine, but at one-tenth of the dosage.

In the course of an investigation on cell-mediated immunity in experimental filariasis at a laboratory in the United Kingdom, the maintenance of *L. carinii* in the multimammate rat has apparently been achieved, since several successful passages have been reported. Progress has been made in the analysis of the cell composition of peritoneal exudates and in their qualitative assessment.

WHO-supported studies on protective immunity have continued at an institute in Kuala Lumpur. Responses to challenge inoculations suggest that attempts to immunize domestic cats with X-irradiated

infective larvae of subperiodic *Brugia malayi* have not been very effective, since many of the cats have become positive for microfilariae, whatever the level of X-irradiation employed.

Started in 1968 and co-ordinated by a laboratory in the United Kingdom, the evaluation of a filarial skin-test antigen prepared in Japan from *Dirofilaria immitis* was completed in 1970. It was concluded that the test is of value only when parasites cannot be found or when blood surveys are impossible. In the first instance, a substantial reaction to the test may help to confirm a clinical diagnosis of filariasis; in the second, the frequency distribution of skin reaction sizes in population groups may serve to indicate areas where some transmission of filariasis is taking place.

The WHO International Reference Centre for Filarial Nematodes, London, which maintains a large collection of identified material covering all stages of filarial parasites, has undertaken a study to establish reliable criteria for the identification of these parasites in their vectors.

Onchocerciasis

The direct economic and social effects of onchocerciasis are perhaps more readily discernible than those of the majority of parasitic diseases. In many hyper-endemic areas of West and Equatorial Africa, between 4 per cent. and 10 per cent. of the population suffer from serious ocular lesions and blindness, the blindness rate in some villages rising to between 13 per cent. and 36 per cent.

The urgent need for onchocerciasis control, especially in the West African savanna region, had led to the planning of an inter-country control programme in Dahomey, Ghana, Ivory Coast, Mali, Niger, Togo and Upper Volta. In this connexion a consultation, sponsored by the United Nations Development Programme (UNDP) and WHO, was held in Geneva in July. Six international and bilateral assistance organizations were represented, as well as Ghana, the Conseil de l'Entente and the Organization for Co-ordination and Co-operation in the Control of Major Endemic Diseases. The allocation of responsibilities for technical and financial support to the proposed project in the Volta river basin was discussed, and the terms of reference for a UNDP preparatory assistance mission to the governments concerned were drafted.

As part of the WHO-assisted onchocerciasis control project in Guinea, an epidemiological survey was conducted in 24 villages in the Kankan and Kerouané areas. Although different degrees of endemicity were observed, the survey did not reveal any relationship between the prevalence of infection (from 8.1 per cent. to 71.4 per cent.) and that of blindness (from nil to

15.2 per cent.). It was noted, however, that the two villages with the highest blindness rates were situated very close to the Milo river, where the *Simulium* population is particularly dense. At the National Medical Service Dispensary, Kankan, skin biopsies of 363 patients from different parts of Guinea showed that 60.3 per cent. were infected with *Onchocerca volvulus*.

Work on the epidemiology of onchocerciasis and the transmission of *O. volvulus* by *Simulium damnosum* in different bioclimatic zones was continued in Upper Volta. A mathematical model was established to estimate the number of infective *O. volvulus* larvae received per individual simuliid per time unit (month, season or year). It permits the assessment, by entomological criteria alone, of variations in intensity of transmission, and these have been found to accord with variations in the severity of clinical manifestations.

Studies of different simuliid populations revealed that the average natural infection rates were higher at low altitudes. Investigations on the influence of temperature on the development of *O. volvulus* in *S. damnosum* showed that at low temperatures, in natural conditions, the cycle is considerably lengthened and parasite mortality high.

In long-term comparative studies on African and American strains of *O. volvulus* at a laboratory in Cameroon, chimpanzees infected with a Sudan savanna strain of this parasite showed low microfilaria counts in contrast to those infected with a forest strain. A Guatemalan strain of *O. volvulus* in chimpanzees has shown an apparent terminal decline after five years.

The same laboratory has carried out trials on the chemotherapeutic value of a basically substituted 2,6-bis-benzimidazole derivative in chimpanzees. At doses of 4mg/kg twice a week, microfilariae were usually completely eliminated within 2-4 weeks. A report on trials in Cameroon of the effects of melarsenyl potassium (Mel W) on *O. volvulus* appeared in the *Bulletin*.¹

According to preliminary results obtained in London, microfilariae of *O. gutturosa* injected subcutaneously into laboratory mice concentrate in the skin of the nose and ears, regardless of the inoculation site. This finding may be valuable for future chemotherapeutic studies.

Research on onchocerciasis is handicapped by failure to obtain a complete breeding-cycle of *Simulium* under laboratory conditions. An institute in the Federal Republic of Germany is accordingly con-

tinuing studies to determine the hydrochemical conditions affecting the immature stages of the Simuliidae.

Following the encouraging results obtained with the use of aerial spraying of larvicides for *Simulium* control in the White Volta river basin in West Africa, plans are being drawn up for trials on a larger scale in two different ecological zones (see page 42).

Trypanosomiasis

The project for operational research on the eradication of human and animal trypanosomiasis, financed by the Special Fund component of the United Nations Development Programme (UNDP/SF), with WHO as executing agency and with the collaboration of FAO, has continued in Kenya. Of special interest was the development of a simple laboratory test to distinguish between *Trypanosoma brucei* and *T. rhodesiense* isolated from animals or *Glossina*.² Hitherto, these two trypanosomes could be distinguished only by a direct infectivity test in a volunteer. Diagnostic work using serum immunoglobulin M (IgM) estimations and fluorescent-antibody tests has continued; a recently developed capillary agglutination test is also being used, and the role of heterophil antibodies in trypanosomiasis is being investigated.

The technique of spraying residual insecticides in invert (water-in-oil) emulsion from fixed-wing aircraft and helicopters was tested as a means of *Glossina* control.

The collection of trypanosome strains at the WHO International Reference Centre for Trypanosomiasis, in Tororo, Uganda, has been considerably increased and the strains were recently transferred from solid carbon dioxide at -79°C to liquid nitrogen at -196°C for better preservation. Samples from 250 strains were used by workers in Tororo or distributed to institutes in the Federal Republic of Germany, Kenya, Switzerland, Uganda, United Kingdom and United Republic of Tanzania. The Centre carried out IgM and fluorescent-antibody tests on more than 4300 dried-blood samples from human surveys in Ethiopia, Uganda, United Republic of Tanzania and Zambia and also collaborated closely with the UNDP/SF project in Kenya.

A new system for the comprehensive documentation of trypanosomes and other medical protozoa, and their preservation at low temperature, was introduced at a laboratory in London. A fully documented bank

¹ *Bull. Wld Hlth Org.*, 1970, 42, 115-127.

² *Bull. Wld Hlth Org.*, 1970, 42, 650-651, 911-916.

for the preservation of sera and antigens at -20°C has been established at the same laboratory.

The WHO International Reference Centre for Immunoglobulins, at Lausanne, Switzerland, is preparing a monospecific anti-IgM serum for distribution to investigators in Africa dealing with the sero-immunological aspects of African trypanosomiasis. The Centre has now developed a test to detect the presence of IgM of low molecular weight, since this may have a disturbing effect on quantitative IgM estimations using diffusion techniques.

With WHO support, an institute in London carried out investigations in Nigeria on the efficacy of cellulose column separation of trypanosomes from blood in the diagnosis of trypanosomiasis due to *T. gambiense*, in which parasitaemia is often very low. Under field conditions, this technique achieved the positive diagnosis of a higher proportion of cases than any other method or combination of methods. Attempts are now being made to improve its sensitivity still further.

There is some indication that even cases with low parasitaemia may still act as a source of infection for *Glossina*. A laboratory in Upper Volta is accordingly setting up colonies of these flies, which will be used for investigating this possibility and for biological studies.

In the field of chemotherapy, basic research on the effect of various drugs on DNA in the trypanosome kinetoplast and its replication continued to be supported at institutes in Belgium and France.

Work in Costa Rica has brought out the important part played in the epidemiology of Chagas' disease by opossums, which are significant reservoirs of infection and come into close contact with both human populations and triatomid vectors. This sustained triple contact of reservoir host, vector and man is similar to that postulated for individual foci of *T. rhodesiense* trypanosomiasis in Africa.

Institutes in Argentina and France are collaborating in a comparative serological study of American and African trypanosomiasis. Investigations have started on possible cross-reactions between Chagas' disease and African trypanosomiasis, on the one hand, and unrelated protozoan infections, on the other.

Further information on work on Chagas' disease in the Region of the Americas will be found in Chapter 15.

Leishmaniasis

During 1970, the Organization's research programme on leishmaniasis was principally concerned with the immunological aspects of the disease.

The WHO International Reference Centre for Immunoglobulins, at Lausanne, Switzerland, initiated

a study of the fundamental aspects of cell-mediated immunity in leishmaniasis. In Iran, experimental studies showed that, when combined with BCG, both *Leishmania tropica* and *L. enriettii* were immunogenic in mice, whereas these parasites injected individually were ineffective as antigens.

Guidelines and techniques were established for a collaborative research project to assess sero-immunological tests for the differentiation of *Leishmania* species in man.

Workers at an institute in Moscow have perfected a method permitting the degree of antigenic affinity between individual strains of *Leishmania* to be determined. The serological independence of the species studied has been shown in a number of experiments. Preliminary results of another investigation at the same institute suggest that strains with similar immunological characteristics may produce cross-immunity in vertebrate hosts.

Leishmanin prepared at the WHO International Reference Centre for Leishmaniasis, at Jerusalem, is now available to research laboratories.

Amoebiasis

WHO is supporting and co-ordinating research on techniques to permit a more accurate diagnosis of amoebiasis and thus a better assessment of its epidemiology and public health importance.

In London, work started on a method for the specific staining of *Entamoeba histolytica* in faeces. In connexion with a comparative study of serological tests in amoebiasis, serum samples from different endemic areas—in the Region of the Americas and the South-East Asia Region—were sent for examination to laboratories in Atlanta, Ga. (USA), Lyons (France), and Prague. In Atlanta, the indirect haemagglutination test, using an axenic amoebic antigen, gave very high titres in cases of amoebic liver abscess, whereas the titres obtained in intestinal amoebiasis were low. Independent fluorescent-antibody, indirect haemagglutination and complement-fixation tests in Lyons and Prague confirmed the results obtained in Atlanta.

To assess geographical differences in amoebiasis, data on autopsy findings and procedures, as well as treatment facilities, were collected from institutions and hospitals throughout the world.

Mycotic Infections

Histoplasmosis caused by *Histoplasma duboisii* is a disease which is restricted to the African continent, and about which very little is known. There is an

almost complete lack of information not only on the ecology of the fungus involved and the prevalence of infection but also on the value of the serological procedures currently used in diagnosing the disease. Following a consultation on the public health importance of mycotic diseases, held in Geneva in December 1969, a WHO-supported project involving the serological examination of a large number of sera from random population samples in an endemic area of the Democratic Republic of the Congo has been undertaken.

In Yugoslavia, the epidemiology and natural history of ringworm infection have been the subject of WHO-assisted surveys covering a high proportion of the population in three endemic foci of dermatophytoses of the scalp. It was found that about 96 per cent. of those infected with *tinea capitis* acquired the disease before the age of 10 years and that the family rather than the school was the main source of infection. No epidemiological connexion was established between endemic foci of ringworm of the scalp and animal infections, nor did the soil appear to constitute a significant reservoir of infection for pathogenic dermatophytes already adapted to parasitic life in man or animals.

Ecological studies of mycetoma continued at an institute in Paris. Investigations of fungi collected in Senegal showed that *Neotestudina rosatii* was commonly found in soil samples, whereas *Leptosphaeria senegalensis* was isolated only from dry thorns and *Madurella mycetomi* from sandy soil. Isolation procedures and culture media were improved. The same institute has started an epidemiological study of mycetoma agents, notably *Nocardia*, and an ecological investigation of fungi responsible for sporotrichosis.

Other Parasitic Infections

In closed communities, the incidence of helminthic and protozoal infections is usually high and their transmission is directly dependent on the behaviour patterns of a restricted population. The epidemiology of certain soil-transmitted helminthic diseases has accordingly been studied, with WHO support, in a mental institution in the United States of America.

In all the infections observed, faecal contamination played a major role. Particularly noteworthy was the ability of the parasites to exist, develop, propagate and maintain a high level of endemicity under "abnormal" indoor conditions and to adopt a curtailed life-cycle different from that occurring under more "natural" conditions.

Severe and fulminating cases of *Strongyloides stercoralis* infection occurred in children during the

first 18 months of residence in the institution, and all deaths from strongyloidiasis were in this group of patients. With age and length of residence, resistance to parasitic infections became more marked, but this was offset by superimposed bacterial and viral infections, which also enhanced the pathogenicity of the parasitic infections. As part of the study, sera collected from 56 cases of strongyloidiasis are being tested in a laboratory in the United States of America with a view to developing a serological test for silent *S. stercoralis* infections.

Research on nutritional relationships in ascariasis was continued in Israel, using chickens infected with *Ascaridia galli*. Intestinal absorption is being studied with the aid of radioisotopes. A preliminary finding was that, 33 days after infection, low worm burdens did not interfere with the absorption of nitrogen (proteins), calcium or phosphorus.

Vector Biology and Control

During 1970, the search for new approaches to vector control was given fresh impetus by worldwide concern about the effects of pesticides—notably the chlorinated hydrocarbons—on the environment. This concern was reflected in a resolution adopted by the Twenty-third World Health Assembly on research on alternative methods of vector control.

There can be little doubt, however, that DDT and certain other pesticides will continue to be employed in public health programmes, since on present evidence the benefits of their use in vector control far outweigh the possible hazards. During the past year, WHO accordingly laid increasing emphasis on the safe use of pesticides. Toxicological investigations on new compounds were intensified, studies on the long-term effects of exposure to pesticides were started, steps were taken to deal with possible outbreaks of pesticide poisoning, and research on the possible carcinogenicity of DDT was continued. In addition, collaboration between FAO and WHO on the safe use of pesticides in agriculture was strengthened.

Studies of insect ecology have been extended, with special emphasis on the problem of the dry-season survival of *Anopheles* mosquitos and on the accumulation of information on certain vector species. This information is being computerized for easier reference.

Another subject of increasing concern is the appearance of resistance in rats (and housemice) to anticoagulant rodenticides in Europe, particularly as there has been a recrudescence of plague in certain parts of the world from which it had long been absent. The Organization has accordingly laid greater stress on

the testing of potential rodenticides in its programme for the evaluation and testing of new pesticides.

Applied Ecology

Information on the biology and distribution of four species of tick vectors within the genera *Ixodes*, *Hyalomma* and *Rhipicephalus* is being collected by the four Regional Reference Centres and stored in the WHO computer in Geneva. The four centres, which were all established in 1970, are at the Institute of Parasitology in Prague, the United States Naval Medical Research Unit No. 3 in Cairo, the Gamaleja Institute of Epidemiology and Microbiology in Moscow, and the Department of Zoology of the University of Maryland, USA.

Information on mosquito vectors of arbovirus diseases, including data on the distribution and density of *Aedes aegypti* and on six related species in the *Aedes* (*Stegomyia*) group, is also being collected and stored in the computer. This information will be circulated to interested organizations and will be supplemented by large-scale surveillance maps prepared by WHO to provide information on the risks of arbovirus transmission in terms of the presence and density of the vectors.

The WHO East African *Aedes* Research Unit at Dar es Salaam has begun work on control methods, based on ecological studies carried out over the past two years. The fertility of hybrids between the colour extremes of *A. aegypti* was investigated in the laboratory and found to be normal; however, olfactometer experiments have shown distinct host-preference differences between the forms.

In most East African towns, *A. aegypti* breeds out of doors in tree-holes or discarded containers; however, indoor breeding (usually of the light form) occurs in certain areas where water is stored in large jars in the houses. The Research Unit has also studied the breeding of *A. simpsoni* in terms of numbers per unit area. Over 2000 adult mosquitos of the more important vector species were collected by the Unit and sent for assessment to the East African Virus Research Unit, Entebbe, but tests with new-born mice failed to demonstrate the presence of any virus.

The WHO Japanese Encephalitis Vector Research Unit at Seoul has investigated seasonal variations in the density and virus content of the principal vector, *Culex tritaeniorhynchus*, in the rice-growing area of Chol-la-Puk-do. The adults of the species first appear in mid-June and are found mainly in cowsheds and pigsties, but seldom in houses. The larval populations in the rice fields were found to increase to 13 per square metre in early July, prior to the transmission season.

Despite their virtual elimination by means of agricultural insecticides, reinfestation occurs from sources so far unidentified. Though larvae are found in the rice fields until mid-November, they do not survive the winter there. Searches in caves, under floors and in other warm spots revealed overwintering *C. pipiens pallens* but no *C. tritaeniorhynchus*. The overwintering *C. p. pallens*, *C. tritaeniorhynchus* from the previous summer, and nestling swallows collected in the spring were not found to harbour any Japanese encephalitis virus.

Studies of *Anopheles gambiae* and *A. funestus* were undertaken at the WHO *Anopheles* Control Research Unit No. 1, Kaduna, Nigeria, to determine whether the life-cycles of these two species contain a vulnerable period favouring their control during the long dry spell from October to May. It is important to know this for the development of biological and chemical control measures. While, in many localities, both larvae and adults disappear at the height of the dry season, the two species continue to develop throughout this season in some restricted water areas near the Kaduna river. When the dry winds begin to slacken and humidity increases before the first rains, larvae and adults increase sharply in number and become redistributed in the vicinity of villages from which they have been absent for several months. In the case of *A. gambiae* in particular, this redistribution appears to coincide with the preparation of fields for crops, during which suitable breeding-places are created in trenches dug to below the water-table level.

The WHO *Aedes* Research Unit in Bangkok has confirmed that, at the height of the dengue-haemorrhagic fever transmission season from July to October, the larval population of *Aedes aegypti* rises only slightly but the biting rate of the adults increases considerably. Spot surveys have shown a high density of *A. aegypti* larvae in nearly all the towns of Thailand, from Chiangmai in the north to the Malaysian border in the south, with between 40 per cent. and 80 per cent. of the houses infested.

Resistance to Insecticides

In its seventeenth report,¹ the WHO Expert Committee on Insecticides recommended a number of changes in resistance tests, and modified test kits have accordingly been prepared for distribution. The results of 1225 resistance tests were received by the Organization during the year; the resistance levels have been calculated and the results communicated to interested workers.

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 443.

Resistance surveys carried out during the year have revealed incipient resistance of the reduviid bug *Rhodnius prolixus* to dieldrin in Venezuela. Resistance of blackflies to DDT has been reported in New York State and eastern Canada, while in Burundi resistance of lice to malathion in the field has been reported for the first time. *Aedes aegypti* has been found to be resistant to malathion in several areas of Puerto Rico where it has been used to control insects of agricultural importance. *Culex pipiens fatigans* has developed a high degree of resistance to fenitrothion in Jerusalem; this mosquito has also developed resistance to malathion (and cross-resistance to fenitrothion) in Okinawa, where malathion has been in use since 1962.

Investigations were supported on the development of resistance to new insecticides and related genetic factors. In a collaborating laboratory in the United States of America, Dursban (OMS-971) induced a 1.4-fold increase in resistance among *C. p. fatigans* over five generations. A laboratory in Canada showed that the increase of resistance to Dursban never exceeded 2.5-fold in 25 generations and that Abate (OMS-786) induced no more than a 3.5-fold increase in resistance in the same number of generations. Cross-resistance between organophosphorus and carbamate insecticides in bedbugs and resistance possibilities in triatomid bugs are being investigated by a collaborating laboratory in the United Kingdom. The same laboratory has carried out selection experiments on colonies of body lice; after 37 generations of selection, only 2-fold resistance to malathion was observed.

The physiological and biochemical bases of resistance have been studied in a collaborating laboratory in the United States of America, with special reference to the newer carbamate insecticides. It was shown that resistance to propoxur in *C. p. fatigans* is due to a combination of two factors: reduced absorption of the insecticide and a decreased toxic effect on the mosquitoes.

The WHO standard reference strain of *C. p. fatigans*, which originated in Rangoon, has been propagated continuously since 1963 at the WHO International Reference Centre for Maintenance and Distribution of Standardized Strains of the *Culex pipiens* Complex, in Mainz, Federal Republic of Germany. After 75 generations of in-breeding, the strain shows no decrease in fertility, fecundity or vigour. The collection of 20 marker strains of this species has been maintained, and four new mutants have been added.

The WHO International Reference Centre for Maintenance and Distribution of Standardized Strains of *Musca domestica*, in Pavia, Italy, now maintains over 60 standard and mutant strains of houseflies and supplied 69 samples of these strains to 46 laboratories throughout the world during the year.

The Department of Biology, University of Notre Dame, Ind., USA, has been designated as a WHO International Reference Centre for Maintenance and Distribution of Standardized Strains of the *Aedes* Complex, and maintains more than 82 strains of this complex.

Evaluation of New Pesticides

The programme for evaluating new pesticides, in which six international reference centres and five field test stations are taking part, has continued.

During the year, 50 new insecticides were submitted for initial laboratory screening for potency (Stage I), and 19 of them were found suitable for further testing. Special laboratory and simulated field tests (Stages II and III) were carried out on 23 compounds as residual insecticides against adult mosquitoes, 11 as mosquito larvicides, 22 against houseflies, and 22 against bedbugs, body lice, rat fleas or ticks. Testing for toxicity to mammals and evaluation of hazard was carried out on 11 compounds.

The first group of compounds includes several with new modes of action; four of them are biodegradable to innocuous components yet active against some DDT-resistant insects, while two produce hormone effects in insects. One of the latter, developed in Czechoslovakia, acts specifically on Triatomidae.

Results of investigations on the relative insecticidal activity and physical properties of many new compounds were published in a series of five articles.¹

Six compounds underwent initial field evaluations (Stage IV) as larvicides against *Culex pipiens fatigans* and *Aedes aegypti* in Thailand and in Upper Volta. The efficacy and carrying distance of three potential larvicides for *Simulium damnosum* control in Upper Volta were tested in Stage IV stream trials. Late in the year, a village-scale trial of Abate (OMS-786) as a larvicide for *Anopheles* control was started at Kaduna, Nigeria; the aim is to determine whether control of the larvae during the long dry season will affect the subsequent density and length of activity of the adult mosquito population (see page 38).

Stage IV experimental hut trials of the residual effectiveness on adult *Anopheles* mosquitoes of three new candidate pesticides—OMS-1202, OMS-1249 and OMS-1331—were carried out in the United Republic of Tanzania and in Upper Volta, and special re-evaluations of methoxychlor (OMS-466) and mixtures of malathion (OMS-1) and gamma-HCH (OMS-17)

¹ Bull. Wld Hlth Org., 1970, 42, 353-368, 369-375, 377-379, 381-385, 387-398.

were undertaken. Methoxychlor, a chlorinated hydrocarbon, is fairly biodegradable, but it has not proved sufficiently effective as a residual house spray against African *Anopheles* mosquitos. The long-term objective of the trials of mixtures of malathion and gamma-HCH is to ascertain whether they can delay or prevent the development of a significant level of resistance.

In a large-scale neighbourhood trial carried out by the WHO *Aedes* Research Unit, Bangkok, with the larvicide Abate, in the form of sand granules, *A. aegypti* densities were reduced to extremely low levels. Cost estimates, in terms of insecticide expended and labour required, suggested that this type of control operation should be within the means of most local governments. Since the number of adult *A. aegypti* declined relatively slowly following the initial larvicidal treatments, a series of trials aimed at adult mosquito control was carried out with insecticidal fogs and ultra-low-volume (ULV) applications of malathion. It was found that ULV ground applications were as effective as aerial applications, though the latter have the great advantage of covering large areas in a relatively short time. The Organization can now recommend an integrated programme for the rapid reduction of adult mosquito populations. Field trials have also been carried out with new ground ULV dispensers capable of treating extensive urban areas at high speed.

Two village-scale trials (Stage V) were made with phenthoate (OMS-1075) and iodofenphos (OMS-1211), respectively, to determine whether a second application three months after the first one would enhance the overall effectiveness of each of these compounds against *Anopheles gambiae* and *A. funestus*. Entomological evaluations at the end of the year suggested that, with either insecticide, the duration of effectiveness was much the same for each application.

In the large-scale operational (Stage VI) trial of fenitrothion (OMS-43) that started near Kisumu, Kenya, in 1969, three rounds of spraying were carried out during 1970 at intervals of rather more than three months. Fenitrothion appears to be very effective in controlling man-biting *Anopheles* mosquitos for more than three months after application; at the same time, there is no appreciable build-up of the compound in the mud walls of houses so that contamination over an extended period is unlikely. Both *A. gambiae* sibling species—A and B—are present in the area. Biological studies indicate that, although both bite man and rest to a certain extent in houses, species A appears to feed more frequently on man and species B on Bovidae. Species A is more frequently found

resting in houses, while species B rests mainly out of doors. Both apparently transmit malaria.

Control of Rodents

With the recrudescence of human plague in recent years in many local areas from which it has long been absent and the recognition of the permanent character of the numerous natural foci of wild rodent plague in various parts of the world, the Organization's programme on rodent ecology and control is being expanded. The programme is concerned with urban rat populations and with rural rodents as reservoirs of plague; in collaboration with FAO, it also deals with the problem of food losses caused by rodents.

In many cities throughout the world, overcrowding has led to a deterioration in environmental health standards accompanied by increases in the rat population. The appearance in several parts of Europe of resistance to the anticoagulant rodenticides, which are among the main weapons for rat control, is a serious portent. During 1970, the Organization continued to search for new rodenticides, and 24 candidate compounds are now being tested by four collaborating laboratories under the evaluation programme started in 1969.

In all WHO Regions, surveys of rodent populations, in terms of species, density and public health and economic importance, are being carried out so as to provide essential baseline data for control programmes. The Organization has assisted most of the countries in the Eastern Mediterranean Region in assessing the extent of rodent infestation and has recommended appropriate control measures to the governments concerned. In addition, a two-week course for public health officials on rodent biology and control, organized by WHO with the support of the Danish International Development Agency, was held in Beirut in September.

Safe Use of Pesticides

Toxicological investigations of newly-developed pesticides have continued side by side with their entomological evaluation. The safety of a new carbamate insecticide, OMS-227, was studied during a village-scale (Stage V) trial by the WHO *Anopheles* Control Research Unit No. 1. As several mild reactions occurred among the spraymen, the compound was considered unsuitable as a residual indoor insecticide with the present means of application.

During spraying operations in the large-scale operational evaluation (Stage VI) of the organophosphorus compound fenitrothion (OMS-43) near Kisumu, Kenya, toxicological studies confirmed the favourable observations made in 1969 in the course of the first round of spraying. No complaints or clinical signs attributable to exposure to the insecticide were recorded among the workers, who carried out three rounds of spraying, each lasting for six to eight weeks, nor were any complaints received from the 20 000 or so inhabitants whose houses had been sprayed. As in the previous year, slight to moderate depression of blood cholinesterase activity was observed in most of the spraymen towards the end of the spraying rounds, indicating the need for regular surveillance during lengthy spraying operations so that the degree of exposure may be controlled.

In Brazil, WHO has continued to co-operate closely with FAO, the executing agency, in the project for expansion of work on the safety of pesticides begun in 1969 and financed under the Special Fund component of the United Nations Development Programme. A toxicology laboratory has been established as part of this project, and techniques have been developed for the routine testing in mammals of the various pesticides as required. Systematic surveillance of degrees of exposure is being carried out among workers handling certain pesticides and the hazards to man are being assessed in areas where they are used on a large scale.

The Organization has continued to promote studies on the possible long-term effects on man of prolonged exposure to DDT. Increased support was given to a laboratory in Brazil for intensive surveillance studies on a group of DDT spraymen working in the malaria eradication campaign. A similar project was launched during the year in India on the basis of a comprehensive feasibility study carried out by the Organization; in this a cross-sectional morbidity study on malaria spraymen is being undertaken on a somewhat larger scale. Clinical and biochemical data are being collected to see whether morbidity patterns in exposed subjects differ significantly from those in control groups. If so, their relationship to the intensity and duration of DDT exposure will be examined.

Further progress has been made in the WHO-supported research project carried out in various laboratories in collaboration with, and under the direct supervision of, the International Agency for Research on Cancer (IARC) to ascertain the possible carcinogenicity of DDT on the basis of feeding studies covering several generations of rodents. Additional experiments have recently been started, including investigations of the possible regression of lesions in the liver when

DDT is no longer administered, and the possible carcinogenicity of the main DDT metabolites, namely, *p,p'*-DDE and *p,p'*-DDD. In November 1970, scientists from four collaborating laboratories in France, Italy and the Union of Soviet Socialist Republics took part in a meeting convened in Lyons, France, by the IARC, and reviewed the progress of the experiments. The results of studies in Israel on the distribution of DDT and metabolites in human fat in selected populations were also discussed, as well as data obtained at a laboratory in the United States of America on DDT and metabolite storage levels in various experimental animal tissues.

With the expansion of the Organization's work to promote the safe use of pesticides, a long-term programme in this field has been drawn up. The general aims are to assess the extent of the health problem posed by pesticides, to promote toxicological research and to investigate the organization of pesticide use in the light of safety requirements. The programme includes a study of environmental contamination by pesticides used in vector control and the development of procedures for bringing rapid international aid to any country, should a major outbreak of pesticide poisoning occur. At an informal consultation held in December on the place of DDT in antimalaria operations, it was concluded that, while the outdoor use of DDT should be avoided as far as possible, its use for indoor spraying in routine antimalaria operations is essential for the health protection of the population and does not involve a significant risk to man or wildlife.

During the year, advice and guidance were given to Member States to help them develop national schemes for the safe use of pesticides.

Specifications for Pesticides

Specifications for new insecticides have continued to be developed concurrently with their evaluation for entomological effectiveness in the field. Thus, interim specifications have now been prepared for the technical grade and water-dispersible powder formulations of two new organophosphorus insecticides tested at Stage V in Nigeria during the year: phenothoate (OMS-1075) and iodofenphos (OMS-1211).

Twelve analytical laboratories in nine countries—Czechoslovakia, Denmark, the Federal Republic of Germany, Iran, Japan, Nigeria, Switzerland, the United Kingdom and the United States of America—took part in a collaborative trial of the analytical method used in the interim specifications for fenitrothion (OMS-43). This trial is being carried out in co-operation with the Collaborative International

Pesticides Analytical Committee, which works in close liaison with FAO on the development of internationally acceptable methods of chemical analysis for pesticides. The interim specifications for propoxur (OMS-33) technical grade, water-dispersible powder and emulsion concentrate formulations have been revised.

Various shortcomings in the current analytical method for malathion (OMS-1) have become apparent with the increasing use of this insecticide in public health programmes. Collaborating laboratories in five countries—Denmark, Iran, Nigeria, the United Kingdom and the United States of America—are accordingly seeking an easier and more reliable method.

Samples of standard malathion, dichlorvos, *p,p'*-DDT, gamma-HCH, alpha-HCH, HEOD, and warfarin were sent to laboratories in eight countries—Brazil, the Federal Republic of Germany, France, Italy, the Philippines, Senegal, Spain and Yugoslavia—for use in carrying out the analytical procedures for these substances prescribed in the WHO manual *Specifications for Pesticides used in Public Health*.¹

Application and Dispersal of Pesticides

The WHO Expert Committee on Insecticides met in November to consider the advances made in equipment for the application of pesticides since the publication in 1964 of the WHO manual *Equipment for Vector Control*.² The Committee recommended the early revision of this manual to include information on new equipment, particularly for the ultra-low-volume application of insecticides. The increasing use of aircraft for controlling vectors of human disease was discussed. The Committee reviewed in detail recent research on the optimum droplet size of space sprays and the optimum particle size of residual sprays in relation to biological effectiveness and stressed the importance of using vector control equipment producing optimum-sized droplets or particles.

The vast stretches of river country that provide breeding-sites for *Simulium damnosum*, the vector of onchocerciasis in West Africa, are virtually inaccessible for much of the year. The teams responsible for ground treatment must make their way through dense bush to reach the rivers and can often treat only one or two

points a day. A field trial, based on experience in North America, was accordingly organized in northern Ghana to assess the cost-effectiveness of the aerial application of larvicides to *Simulium* breeding-sites. The results were most encouraging. The larval habitats were readily recognizable from the air and could be accurately treated. Since there was no need to apply large quantities of insecticide to ensure a "carry" to larval habitats downstream, much smaller quantities could be used at each point, thus reducing the risk of contamination of the biotope. These tests were made with DDT and methoxychlor. Methoxychlor is as effective against *Simulium* as DDT, but more biodegradable, and thus could readily replace DDT in control programmes of this type, if necessary.

Emergency Operations

The recent epidemics of yellow fever in West Africa (see page 20) have emphasized the need for means of rapid intervention in emergencies of this kind. Where the vector is *Aedes simpsoni*, which breeds in plants covering very large areas, such intervention may not be economically feasible. However, if the epidemic is confined to towns and villages where the vector is domestic *A. aegypti*, treatment can speedily be carried out by means of insecticidal fogs or the ultra-low-volume application of malathion from the air.

Fogging machines and the appropriate insecticide formulations have been purchased by the Organization and are stored in West Africa where they may be rapidly sent to wherever they are needed.

Biological Control

Following the adoption by the Twenty-third World Health Assembly of resolution WHA23.33 on research on alternative methods of vector control, a marked increase in the Organization's work on biological control methods is envisaged. Four long-term field trials, to be carried out mainly at the WHO field research units in Bangkok, Dar es Salaam, Kaduna (Nigeria) and Taipei, will be supplemented by research at 12 institutes in Europe and the United States of America. The biological control agents to be investigated first include the predacious mosquito

¹ World Health Organization (1967) *Specifications for pesticides used in public health*, 3rd ed., Geneva.

² World Health Organization (1964) *Equipment for vector control*, Geneva.

Toxorhynchites, the microsporidian parasite *Nosema*, *Poecilia* and other larvivorous fish, and the nematode parasite *Romanomeris*. Projected field experiments on the fungus *Coelomomyces*, the bacterium *Bacillus thuringiensis* and viruses attacking mosquito larvae will be held in abeyance until more fundamental knowledge has been obtained. Field studies were completed on the action of *Toxorhynchites* against the larvae of *Aedes aegypti* in Bangkok (*T. splendens*) and in Dar es Salaam (*T. brevipalpis*); methods for the large-scale breeding of the latter species are now being investigated by a research institute in Canada. A study on the use of the guppy (*Poecilia reticulata*) for the control of *Culex pipiens fatigans* larvae has been completed in Rangoon. Laboratory cultures of *Coelomomyces* have been obtained on anopheline larvae at the University of North Carolina, USA, and the University of Otago, New Zealand, while the culture of *Nosema* has been perfected at a research institute in Florida, USA.

Genetic Control

The long-term project on the genetic control of mosquitos in India, started in New Delhi in 1969, has made rapid progress. Intensive surveys have been carried out on *Culex pipiens fatigans* in villages near Delhi and on *Aedes aegypti* in Madras and Rajasthan. Studies on various biological parameters, such as population dynamics, extent of breeding, feeding and resting habits, mating and flight range have begun; these baseline studies will be continued for at least one year before actual experiments are undertaken. Studies have also been initiated to determine sterilizing dosages of chemosterilants and gamma rays for both *C. p. fatigans* and *A. aegypti*.

The WHO International Reference Centre for the Evaluation and Testing of New Insecticides, in Gainesville, Fla., USA, has carried out a successful genetic control experiment off the coast of Florida. The indigenous population of *C. p. fatigans* was eliminated in 10 weeks by releasing between 8400 and 18 000 sterile males of the species per day. The chemosterilant thiotepa was used for this experiment.

Incompatibility tests with *C. p. fatigans* from Delhi, Kuala Lumpur and Singapore have led to the establishment of a vigorous sterile strain at the WHO International Reference Centre for Maintenance and Distribution of Standardized Strains of the *Culex pipiens* Complex, in Mainz, Federal Republic of

Germany. A series of translocations giving varying degrees of sterility has been developed in *C. p. pipiens* now being tested under field conditions in the south of France.

The WHO International Reference Centre for Maintenance and Distribution of Standardized Strains of the *Aedes* Complex, established during 1970 at the Department of Biology, University of Notre Dame, Ind., USA, has developed a strain with a "new" chromosome having two translocations and containing parts of all three linkage groups present in the species. The population suppression rate was found to be much more rapid after the release of males of this strain than after the release of those with a single translocation. The production of a new chromosome with altered morphology may also provide an evolutionary means of introducing new karyotypes in nature.

Further experiments aimed at the genetic control of *Anopheles gambiae* were carried out at the WHO International Reference Centre for Maintenance and Distribution of Standardized Strains of *Anopheles*, in London. Hybrid males derived from a cross between *A. gambiae* species A and *A. merus* were found to be highly efficient in competition with species A but slightly less so in competition with species B. Sterile males resulting from a cross between species B and *A. merus*, on the other hand, were relatively inefficient against both species A and species B, though more so against the former. Two sex-linked cases of inherited semi-sterility were produced by X-ray irradiation in the Kano strain of *A. gambiae* species B, the males of both lines being only half as fertile as the wild type. Efforts were also made to induce translocations in the *A. gambiae* strain from Bobo-Dioulasso, Upper Volta.

Vector Control Aspects of International Quarantine

In 1968, the Twenty-first World Health Assembly recommended the use of two methods for disinsecting pressurized aircraft: vapour disinsection in flight, or aerosol disinsection on the ground on arrival. The date for implementing the recommendations for vapour disinsection was postponed by the Twenty-third World Health Assembly for one year, i.e., until 31 December 1971, subject to the solution of certain administrative and technical difficulties that have arisen since the recommendations were made.

In this connexion, studies on the possible corrosive effect of dichlorvos on materials used in aircraft construction and on its effects at low atmospheric temperatures and pressures have been started by the WHO International Reference Centre for the Evaluation and Testing of New Insecticides, Savannah, Ga., USA, in collaboration with the United States Federal Aviation Administration and ICAO.

The Twenty-third World Health Assembly also recommended that, for the present, the "blocks-away" procedure for aircraft disinsection should be

used, and health administrations were asked to ensure that this procedure is conscientiously and effectively carried out. Detailed instructions and guidelines on its use in high capacity aircraft have been prepared for crew members. WHO is continuing research on new and improved aerosol formulations for aircraft disinsection.

At the WHO courses on epidemiological surveillance and international quarantine held in the Western Pacific Region (see page 265), special stress was laid on vector control in ships and aircraft and at ports and airports.

CHAPTER 3

NON-COMMUNICABLE DISEASES

Cancer

There has been no sufficiently fundamental advance in knowledge of the etiology or therapy of cancer to warrant any radical alteration in the Organization's programme for this disease in 1970. Accordingly, it continued to focus primarily on two important aspects—clinical cancer control, and the unification of histopathological and cytological nomenclature.

Progress has been made in clarifying epidemiological factors affecting the incidence of some cancers, in refining or developing diagnostic and therapeutic methods, and in some fields of basic cancer research. There is a reasonable prospect of developing and simplifying certain new immunodiagnostic procedures for some forms of cancer to the point where their use in early detection programmes may be envisaged. The Organization is encouraging studies for this purpose. However, the most significant feature in clinical oncology remains a constantly rising incidence of many types of cancer. Therefore WHO's cancer control activities are concentrated on early detection programmes and on diagnosis, treatment and education.

It is intended that, wherever possible, early detection programmes should be an integral part of other health activities, many of which can serve as suitable vehicles for them, offering the additional advantage of not erecting the psychological barrier that prevents so many from utilizing the services of "cancer clinics". The early detection of cervical cancer, for instance, can often be allied with family planning activities.

This principle was developed in the material prepared for World Health Day 1970, the theme of which was "Early Detection of Cancer Saves Lives", and in the February-March issue of *World Health*, devoted to the same subject. It saw practical application during the year in preparatory work by the Organization with a view to establishing central cytology laboratories in many parts of the world in which medical and other health personnel, particularly those in family planning programmes, may be trained in the appropriate techniques for detection of early cervical and other neoplasms.

A pilot project for the early detection of cervical and oropharyngeal cancer in Madras, India, conducted with assistance from the Norwegian Govern-

ment and WHO, began in 1970 after the completion of the preliminary study undertaken the previous year.

Another aspect of the Organization's cancer control programme is illustrated by the establishment in 1970 of a fourth international reference centre for the evaluation of methods of diagnosis and treatment. This new centre, at the National Cancer Centre Hospital, Tokyo, deals with stomach cancer and operates in collaboration with institutions in Chile, Colombia, Czechoslovakia, France, Nigeria, the Union of Soviet Socialist Republics, the United Arab Republic and the United Kingdom. It is drawing up a standardized system for stomach cancer recording, follow-up and assessment, and preparing a classification of stomach cancer; it is also assembling comparable data from areas of high and low risk for case-control studies, reviewing the role of chemotherapy in the management of early and advanced gastric cancer, and evaluating new techniques of potential diagnostic value.

The International Reference Centre for the Evaluation of Methods of Diagnosis and Treatment of Female Genital Tract (Ovarian) Cancer, in Leningrad, USSR, which was set up in December 1969, held its first review meeting in October 1970 to discuss the first priority group of studies carried out during the year—namely, the value of laparoscopy for earlier diagnosis, the value of extensive surgery with removal of as much of the tumour as possible, the value of limited surgery in cases of extensive disease, and the value of post-operative radiotherapy and of chemotherapy in cases incompletely treated by surgery and in inoperable cases.

Without international agreement on histological criteria for the classification of cancer types and a standardized nomenclature, comparative studies on cancer are barely possible and collaboration between cancer workers in different parts of the world is difficult. WHO has therefore continued its long-standing programme on classification through its numerous international reference centres.

At the end of the year a new centre, the International Reference Centre for the Histopathological Nomenclature and Classification of Tumours of the Central Nervous System and Allied Structures was established

at the Department of General Neurology, Max-Planck Institute for Brain Research, Cologne, Federal Republic of Germany.

The International Reference Centre for the Histopathological Nomenclature and Classification of Oral Precancerous Conditions, in Copenhagen, held a technical review meeting in Bombay in January with representatives of the collaborating centres to study the results of their examination of circulated material from 167 cases. Problems of defining and assess degrees of cell atypia were discussed, and systematized methods for minimizing inter-observer variations were presented and adopted for testing.

The International Reference Centre for the Histopathological Nomenclature and Classification of Skin Tumours, in Perth, Australia, held a review meeting with its collaborating centres in Freiburg, Federal Republic of Germany, in September, when the classification and nomenclature of melanogenic tumours was the primary subject discussed.

The International Reference Centre for the Histopathological Nomenclature and Classification of Salivary Gland Tumours, London, and its collaborating centres organized a meeting in Montreal, Canada, in October, when the final results achieved in the testing of their proposed classification and nomenclature were reviewed.

The International Reference Centre for Nomenclature in Cytology, in Geneva, prepared for publication the terminology of the cytology of the female genital tract agreed by the 14 collaborating centres; this terminology has already been provisionally adopted by the Terminology Committee of the International Academy of Cytology. The work of the Reference Centre was extended by commencing preparations for the standardization of the nomenclature for additional sites (e.g., lung, breast, bladder and body fluids) for which cytology is used as a diagnostic tool, and of pathological material obtained by aspiration.

The methodology for studies of a possible relationship between hormonal steroids used in fertility control and neoplastic changes of the cervix uteri and breast was examined in detail at a three-day workshop organized by WHO in October in Stockholm with the collaboration of the Swedish National Board of Health and Welfare.

Plans were prepared for a possible cancer programme in the European Region, and a programme was drafted for the unification of hospital-based registries set up by the larger cancer institutions in the Eastern Mediterranean Region.

Since in many countries the therapeutic facilities for cancer are limited (for example, those for radiation therapy and highly sophisticated surgery), a practical

treatise on the chemotherapy of cancer that can also be used as a postgraduate teaching aid was compiled during the year.

A series of international epidemiological studies on breast cancer has been supported by WHO for several years and the first three reports—two on the possible protective effect of lactation against breast cancer and the third on the relation between the risk of breast cancer and the mother's age at the time of birth of her first full-term child—were published in the *Bulletin*.¹ The first two reports show that it is unlikely that lactation has any protective effect against breast cancer. The third paper indicates that women who bear their first child when aged under 18 years have only about one-third the breast cancer risk of those whose first child is born after they have reached the age of 35 years; this association of age at first parturition with breast cancer risk requires different etiological hypotheses from those that have been invoked in the past to explain the association between this risk and reproductive experience.

As in the past, WHO maintained close liaison with the International Union against Cancer. The Organization was represented at the Tenth International Cancer Congress, organized by the Union in May 1970, and at a meeting of the International Association of Cancer Registries, at which recent progress in cancer research and clinical cancer control was reviewed.

The review of the cancer rubrics for the Ninth Revision of the International Classification of Diseases is being carried out jointly by the International Agency for Research on Cancer and WHO. For this purpose questionnaires were sent during the year to many cancer workers throughout the world in order to ascertain what changes to the Eighth Revision would be most desirable, and a number of WHO/IARC meetings were held on this subject.

International Agency for Research on Cancer

Much of the research programme of the International Agency for Research on Cancer (IARC) has been concentrated upon the identification and measurement of environmental carcinogens. It will undoubtedly be difficult, and sometimes impossible, completely to remove even a proven carcinogen from the environment; and if some, possibly commonly used, substances, should be identified as carcinogenic, socio-economic problems might arise. It is therefore necessary to assess the hazard accurately in order to know whether a given low level of a substance in the environment might be tolerable. Such assessments are often the function of joint FAO/WHO expert com-

¹ *Bull. Wld Hlth Org.*, 1970, 42, 185-194, 195-204; 43, 209-221.

mittees, but it is incumbent upon IARC, working in close collaboration with national research institutes, to provide many of the data on which they are based.

The pollution of air and water has received considerable emphasis, but contamination of food by natural or added substances also requires study. An example of a naturally occurring carcinogen is aflatoxin, a contaminant produced by fungal action on ground-nut meal which is known to be a liver carcinogen—even at minute concentrations—for turkeys and trout fed on such contaminated meal. During the year the IARC continued its study, organized from its Regional Centre in Nairobi, of the pattern of incidence of primary liver cancer in regions of Central Africa where this cancer is relatively common and where aflatoxin may be contaminating human food. The study combines an incidence survey with actual analysis of aflatoxin in the family diet. This programme was also extended to other areas, including the Ivory Coast, where a test for the serological identification of α_1 -fetoprotein in blood samples is being assessed as a diagnostic tool for primary liver cancer. These studies may not only answer the question whether aflatoxin is a liver carcinogen for man but also indicate the degree of risk involved.

The nitrosamines constitute a second example of possible food contaminants that may be carcinogenic for man. They are being investigated with some urgency as it has been shown that they are among the most potent carcinogens for animals, in which they are capable of producing tumours at a concentration of 5 parts per million. Since there is as yet no direct way of extrapolating from these results to man, the approach must, for the present, be limited to monitoring the human environment for nitrosamines while using standard epidemiological techniques to reveal any correlation between the intake of a nitrosamine and the incidence of any particular form of cancer. However, the first problem is to develop reliable methods of chemical analysis capable of identifying and quantifying nitrosamines present in foodstuffs and beverages at concentrations of less than 1 part per million. The Agency has continued its programme to solve the analytical problems, at the same time collecting food and beverage samples for analysis from widely different areas where the cancer pattern can be studied. Positive or negative correlations may answer the question of the carcinogenicity of nitrosamines for man before biological techniques can do so.

Reference is made on page 41 to recent progress in the Agency's field and laboratory investigations into whether DDT represents a potential carcinogenic hazard for man.

Populations with a high risk of cancer exist in both industrialized and non-industrialized countries, and the identification and definition of such populations with different patterns of cancer incidence is the starting-point for the Agency's investigations into the causal factors involved. For example, surveys have shown that the prevalence of oesophageal cancer increases more than ten-fold from west to east over a distance of less than 650 kilometres along the southern shore of the Caspian Sea. Therefore, during the year the Agency, in collaboration with the Institute of Public Health Research, Teheran (where an IARC Regional Centre was established), started studies on dietary practices and personal habits in the area in order to determine the factor or factors responsible for this difference. At the same time, investigations were undertaken into the geographical, geological and climatic differences between the regions of high and low incidence.

Many of the Agency's investigations have concentrated on cancer within non-industrialized states, as being of less complexity than cancer in highly industrialized areas, where the etiology is likely to be multifactorial. A significant proportion of the Agency's work, however, is concerned with several potential carcinogens in industrially polluted atmospheres. Many of these, too, are likely to present a high risk to certain population groups. Thus in 1970 the Agency continued investigations on these carcinogens, including the polycyclic aromatic hydrocarbons, with special emphasis on the standardization of sampling and analytical procedures, and made further progress in its international study of cancer among asbestos workers.

The possible viral etiology of certain cancers is also being studied by the Agency, which was the first to demonstrate the presence of a herpes-type virus in biopsy specimens from cases of cancer of the nasopharynx. In co-operation with the IARC Regional Centre in Singapore and a collaborating centre in Hong Kong as well as with laboratories in Europe and the United States of America, the Agency expanded and strengthened its programme to investigate whether a causal relation exists between this virus and nasopharyngeal cancer and to determine whether there is any special immunogenetic susceptibility to this cancer among certain ethnic groups, particularly the Chinese. The programme, which should at the same time serve as a model for the integration of field and laboratory studies, is financed partly by the National Cancer Institute in the United States of America and the French National League against Cancer.

In the Agency's training programme 40 travel and 25 research training fellowships were awarded during

the year and a training course for 23 French-speaking students on the use of epidemiological techniques in cancer research was held in Lyons in March, jointly with the Centre d'Enseignement de la Statistique appliquée à la Médecine des Universités de Paris.

Close collaboration was maintained with the International Union against Cancer (UICC) on the granting of fellowships and the organization of training courses, since both organizations have responsibilities in this field; and the Agency was represented at the Executive Committee of the UICC and at meetings of its various commissions, as well as at the Tenth International Cancer Congress in May. An interesting innovation in co-operation with the UICC was the publication in 1970 of the second volume of *Cancer Incidence in Five Continents*¹ under the joint editorial responsibility of IARC and the UICC; the previous volume had been prepared by the UICC alone. This book provides data, contributed by cancer registries covering 58 populations in 24 countries, that will permit the IARC to monitor cancer incidence and correlate changes with any measured environmental factors. This could provide leads to the etiology of various cancers.

Cardiovascular Diseases

The Organization increased its activities in cardiovascular diseases during the year—particularly in respect of prevention and epidemiological research, in accordance with the recommendations of the Executive Board at its forty-third session, in 1969. Attention was focused on atherosclerosis, ischaemic heart disease, arterial hypertension, cerebrovascular diseases, cardiomyopathies and rheumatic fever, with the ultimate objective of developing community programmes for the control and prevention of cardiovascular diseases. Such measures must, of course, be founded upon epidemiological studies combined with clinical and experimental investigations.

Ischaemic heart disease was given a high priority; in addition to analyses carried out by the Organization itself, investigations were also promoted or co-ordinated by WHO to test the value of preventive measures, to develop community control programmes for patients with acute myocardial infarction, and to investigate the natural history and etiology of the disease.

An analysis made by WHO² of the mortality from ischaemic heart disease in relation to dietary factors and based on data covering the past 15-20 years in 23 countries revealed general increases over that

period both in the death rates from this disease and in the consumption of total and saturated fats, of sucrose and of other simple sugars; these increases were positively and strongly correlated. The rise in total calories consumed was less conspicuous, and consumption of complex carbohydrates decreased considerably, while that of protein changed only a little. However, no consistent correlation could be found between cardiovascular death rates and dietary patterns within any one country. Another analysis made by WHO was presented at the Third International Congress of Food Science and Technology, held in August, in Washington, D.C. It reviewed data from 74 published epidemiological studies on middle-aged men and revealed a linear relationship between the consumption of both total fats and animal fats on the one hand and serum cholesterol levels on the other.

Since a number of the factors contributory to ischaemic heart disease are operative early in life, studies on prevention should include children as well as adults. However, for practical reasons, all population trials so far have had to be carried out on adults alone. They have not yet proved clearly to what extent lowering the blood lipid levels by diet or by drugs reduces the incidence of ischaemic heart disease. To provide the necessary evidence, a long-term double-blind trial with clofibrate—which reduces cholesterolaemia—is being sponsored by WHO and is now in its third year. It is a primary prevention trial, being conducted on healthy men in Czechoslovakia, Hungary and the United Kingdom. By August more than 13 000 men had been included and the target number of 15 000 is expected to be reached early in 1971. The drop-out rate has been encouragingly low. Several methodological problems that have emerged were solved during 1970—among them being the comparability of blood cholesterol measurements, interpretation of ECG readings and agreement on findings that are difficult to classify; and at a meeting of the investigators concerned in September other study techniques were chosen for joint testing by the collaborators.

The possibility of controlling a number of predisposing factors simultaneously in multicentre trials was explored at a meeting organized by WHO in Rome in November.

A number of studies in recent years have pointed to the fact that a classification of hyperlipoproteinaemias is needed for differential diagnosis of the genetically determined defects in lipid metabolism, for differentiation of hyperlipoproteinaemias accompanying a number of common diseases which promote atherosclerosis, for rational treatment of the lipid disturbance, and to assist in the discovery of the causes

¹ Doll, R., Muir C. & Waterhouse, J., ed. (1970) *Cancer incidence in five continents*, International Union against Cancer; distributed by Springer-Verlag, Berlin, Heidelberg & New York.

² *Bull. Wild Hlth Org.*, 1970, 42, 103-114.

and mechanisms of hyperlipidaemia. WHO accordingly held a consultation in June to draw up a simple, internationally acceptable classification on the basis of which the distribution of disturbances in lipid metabolism in different environments and ethnic groups might be determined.¹

Community programmes for care and rehabilitation in acute myocardial infarction are developing hand in hand with experience and progress in resuscitation techniques, and in the control and prevention of acute complications that may lead to sudden death. Fundamental to their successful expansion is the collection of information on early detection and care, rehabilitation and long-term follow-up. This can best be achieved through the establishment of ischaemic heart disease registers, which may be expected to become the backbone of future comprehensive cardiovascular disease control programmes. The WHO-co-ordinated pilot study of these register, which began in 1968 in the European Region (see also page 147), was extended in 1970 to include 13 registers in 12 European countries and another in Australia. The population covered by each register varies from 140 000 to 540 000 inhabitants. Information in this pilot study is collected according to a standardized operating protocol adopted after repeated testing in a number of these registers, and the WHO computer is used for analysing the data.

Connected with this pilot programme are studies on the use of mobile facilities by which persons trained in coronary care may give emergency pre-hospitalization treatment to patients at the place where the heart attack occurred. Experience with these mobile coronary care units was reviewed, and their organization outlined, at a meeting in Moscow in February.

To meet a need that had become apparent during the courses in coronary care organized in the European Region in previous years, a practical manual was produced describing how to deal with the daily problems encountered by physicians and nurses involved in the care of patients with acute myocardial infarction.²

The results achieved in rehabilitation programmes conducted in a number of different centres need to be evaluated, for no clear-cut data are available on the effect of active rehabilitation on prognosis. Accordingly, two meetings were held (in Denmark and in

France) to draw up the methodology for a co-operative study in the European Region for evaluating post-infarction rehabilitation procedures. A three-week course, in Russian, on physiological methods for assessing the working capacity of cardiac patients was held in Sofia.

The co-operative pilot study of methods for the pathological diagnosis of ischaemic heart disease that was initiated in 1969 in five countries of the European Region yielded first results in 1970. By September a total of 136 cases examined locally by the collaborating laboratories according to an agreed operating protocol for macroscopic and histological study had been analysed and processed in the central laboratory in Switzerland and histological sections from 72 cases had been circulated for examination. The preliminary results point to the diagnostic importance of the dehydrogenase reaction for macroscopic identification of areas with early ischaemic damage which are usually difficult to recognize. It is expected that the trial will result in a simplified technique that will also be suitable for medico-legal purposes in cases of sudden death of uncertain cause.

In the co-operative population study on ischaemic heart disease and cerebrovascular disease, data have now been collected from almost 8000 males 50-69 years of age by the collaborating centres in Czechoslovakia, Japan, Sweden and the Union of Soviet Socialist Republics. Their analysis was begun during the year; incidence studies will continue in each centre for the next several years.

The epidemiology of cardiovascular diseases in the Western Pacific Region was reviewed at a WHO meeting of investigators in Wellington, New Zealand, in February. Cardiovascular diseases—and particularly ischaemic heart disease and arterial hypertension—were shown to be uncommon in most population groups that have been studied except in Japanese migrants to Hawaii and Maoris in New Zealand. Blood pressure and body-weight in several of these groups decrease with age, and low consumption of salt is also a common feature. New Zealand Maoris have a tendency to obesity, gout and abnormal sugar metabolism; the women appear more susceptible to ischaemic heart disease than the men. Population pressure, particularly in the atolls, and socio-economic progress are bringing about changes—sometimes rapid—in the traditional ways of life and leading to gradual urbanization. The participants discussed the methodology of prospective investigations of changes in social conditions and other factors affecting health status in relation to the incidence of cardiovascular diseases that might cast new light on the natural history and prevention of those diseases.

¹ *Bull. Wld Hlth Org.*, 1970, 43 No. 6 (in press).

² Oliver, M. F. & Julian, D. G. (1970) *Manual on intensive coronary care*, World Health Organization, Copenhagen. (A limited number of copies of this manual is available, free of charge, to persons officially or professionally concerned with this field of study, from the WHO Regional Office for Europe, Copenhagen.)

The study of the role played by trace elements in cardiovascular function that was expanded from a pilot study in 1969 was further extended in 1970 to include not only analyses of autopsy and biopsy specimens from healthy and cardiac subjects, but also investigation of the question whether or to what extent an imbalance of trace elements in the environment is an etiological factor in cardiovascular disease. Samples of sugar and rice from countries in all WHO Regions are being collected by WHO and analysed in the laboratory of the International Atomic Energy Agency in Vienna; analyses of water samples by a laboratory in the United Kingdom are also part of this programme. The results will be studied in relation to geological data and to data on the prevalence of cardiovascular diseases. Emphasis will be placed on population groups living in areas still relatively unaffected by technological advancement, where soil and water retain their full natural importance as a source of minerals.

Although cerebrovascular diseases are known to be among the main causes of death in a very large number of countries, reliable data are available from only a limited number of community studies and are incomplete or non-existent in most parts of the world. A meeting on the prevention, treatment and rehabilitation in cerebrovascular diseases was convened by WHO in Monaco in May to assess the size and nature of the problem that cerebrovascular accidents (strokes) represent in different areas, particularly in the European Region; to stimulate the application of recent knowledge on treatment and rehabilitation, and to promote community programmes for prevention and care. As a first step towards facilitating the uniform collection of information, a simple classification based on pathological changes in the brain was agreed upon and diagnostic procedures for the distinction of these major types were described. The basis for a more extended classification, which would require longer preparation, was also considered by the participants, who were drawn from most of the WHO Regions.

For the successful conduct of comprehensive community programmes for the control of stroke, it is, of course, essential to have accurate morbidity and mortality data. These can conveniently be obtained by registering all patients with acute cerebrovascular disease in a community, as is done by the ischaemic heart disease registers mentioned above, and registration of stroke patients started during the year in Göteborg (Sweden) in the area covered by the ischaemic heart disease register.

The Organization continued to assist a number of studies on cardiomyopathies in different parts of the world. In the Region of the Americas, for instance,

arrangements were made for two WHO-sponsored groups—one in Brazil and the other in Venezuela—to conduct population studies on Chagas' disease in close co-operation and to follow common procedures for epidemiological, clinical, methodological, serological, parasitological and other related investigations; it is hoped to explain why, among other things, in Venezuela the heart is predominantly affected, while in Brazil the digestive organs are also frequently involved.

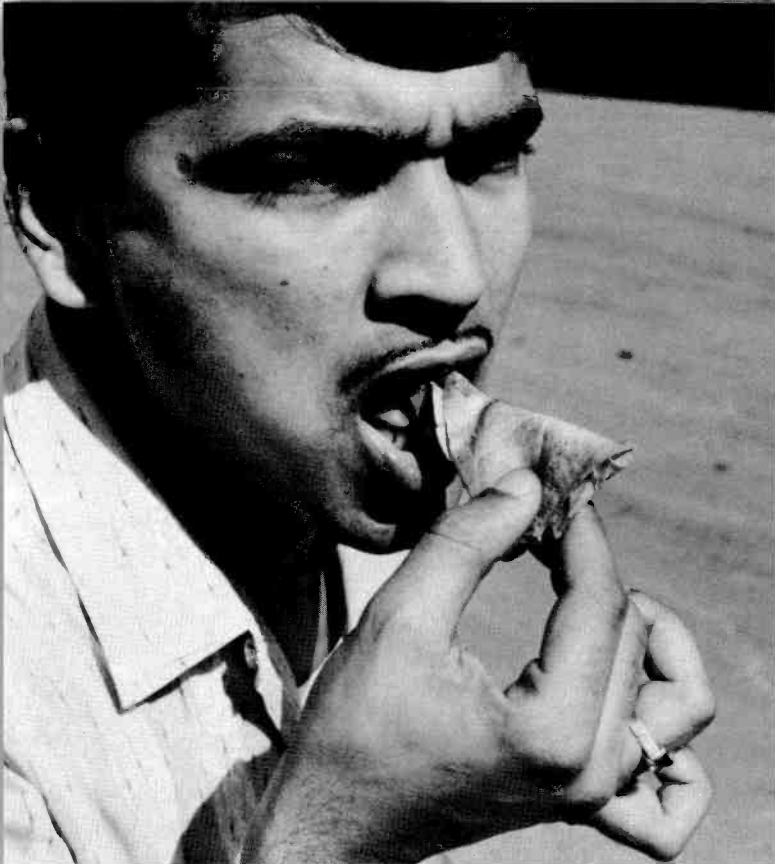
In the African Region, a register of subjects with heart disease in Nigeria is being used as a basis for a number of studies. Endomyocardial fibrosis is particularly frequent in the Ijebu area and attempts were made to investigate subjects with eosinophilia and loaïasis; other studies were concerned with the relation of hypertension to idiopathic cardiomegaly. Post-partum heart failure is also under investigation in an area of Nigeria where this condition was found surprisingly often; information on the way of life and traditional customs in the Hausa community of the area was obtained and investigations on pathogenesis and etiology are now being pursued.

In view of the frequency of rheumatic heart disease in Ugandan children, the WHO Research and Training Centre for Cardiovascular Diseases in Kampala began studies in the Kasangati area on the prevalence of this condition and on its natural history and relationship to cardiomyopathies, with a view to the development of a rheumatic fever control programme.

In Israel, the mechanism of fibrous tissue formation in the damaged myocardium was investigated in rats, and the role of sensitized lymphocytes and of group A streptococci in heart cell cultures was also the subject of WHO-supported research. The studies are related to the pathogenesis of experimental myocarditis and possibly of rheumatic fever.

The Organization has prepared the outline for a pilot community programme for the control of rheumatic fever and rheumatic heart disease. The first agreements for implementing this programme were made during the year with collaborating institutes in Iran, Jamaica, Nigeria and Singapore; the WHO Research and Training Centre for Cardiovascular Diseases, Kampala, will also participate.

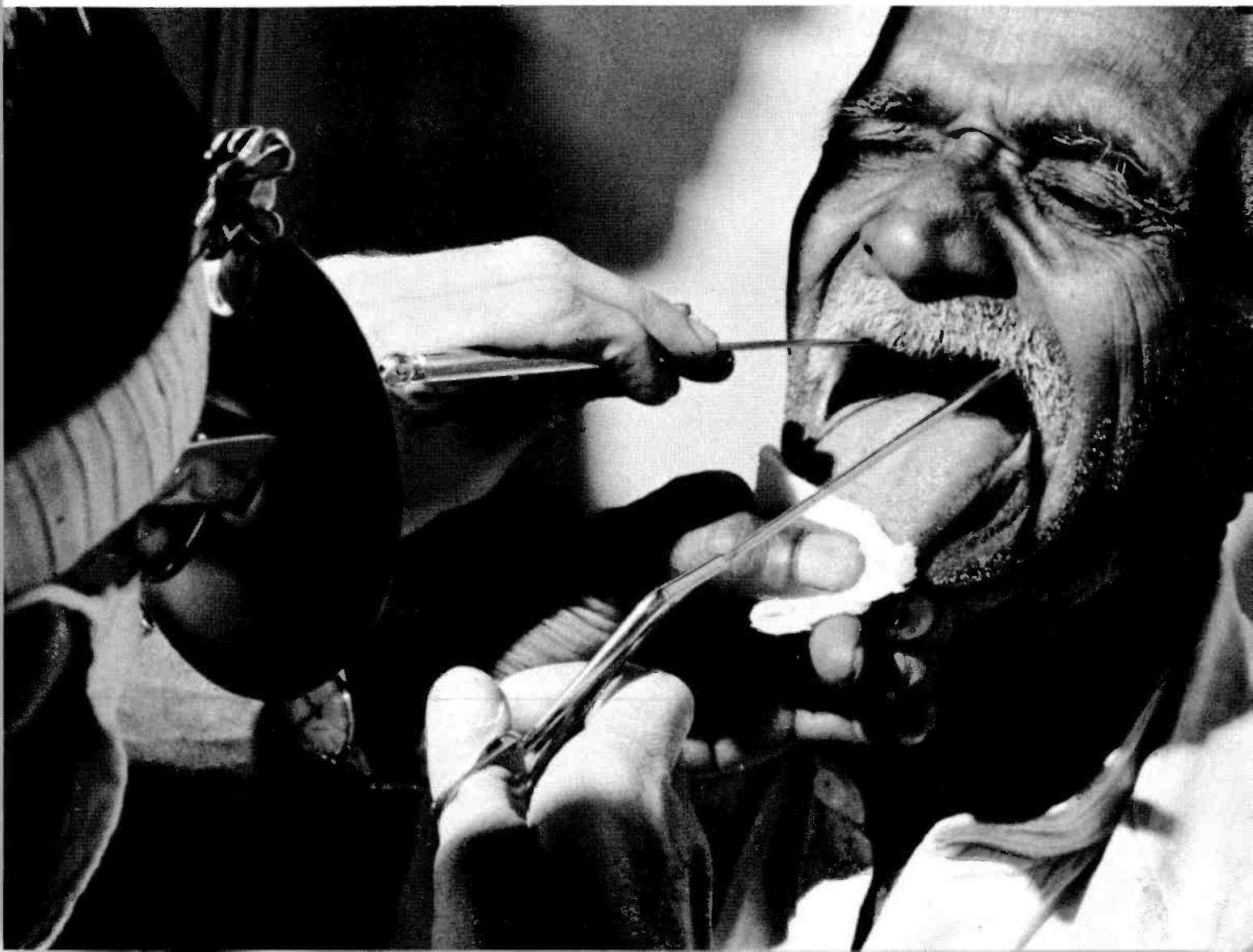
Findings from previous WHO-supported investigations of the effect of altitude on cardiovascular function were confirmed during the year by electrocardiogram readings from population groups living in the Peruvian Andes. These revealed a lesser frequency of high R waves in the left precordial leads among high-altitude dwellers than among lowlanders, indicating lower arterial pressure among the former, and fewer Q waves, indicating a lower prevalence of



ORAL CANCER

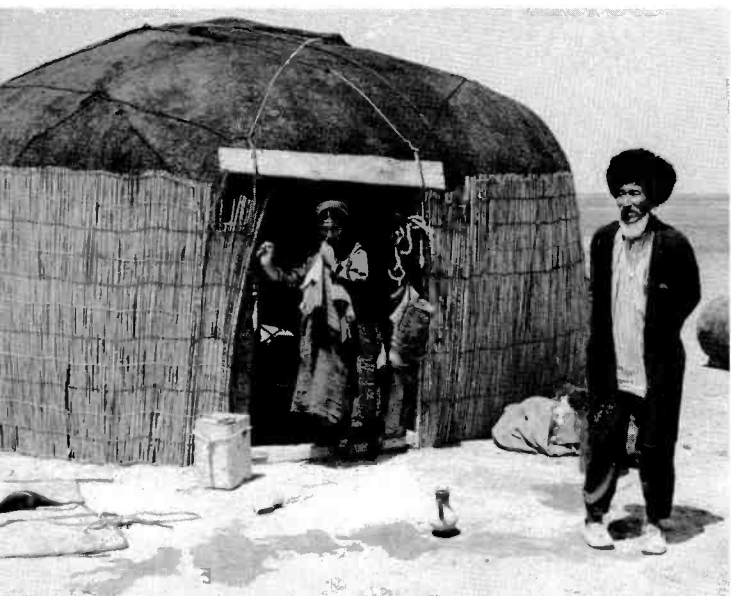
It is common in India to chew "pan", made by wrapping betel leaves smeared with lime around pieces of areca nut, tobacco and other ingredients. This habit is strongly suspected of causing cancer or precancerous lesions.

Below: Examination of a betel chewer for cancer of the mouth. Biopsy specimens are sent to the WHO International Reference Centre for the Histopathology of Oral Precancerous Conditions in Copenhagen.





2

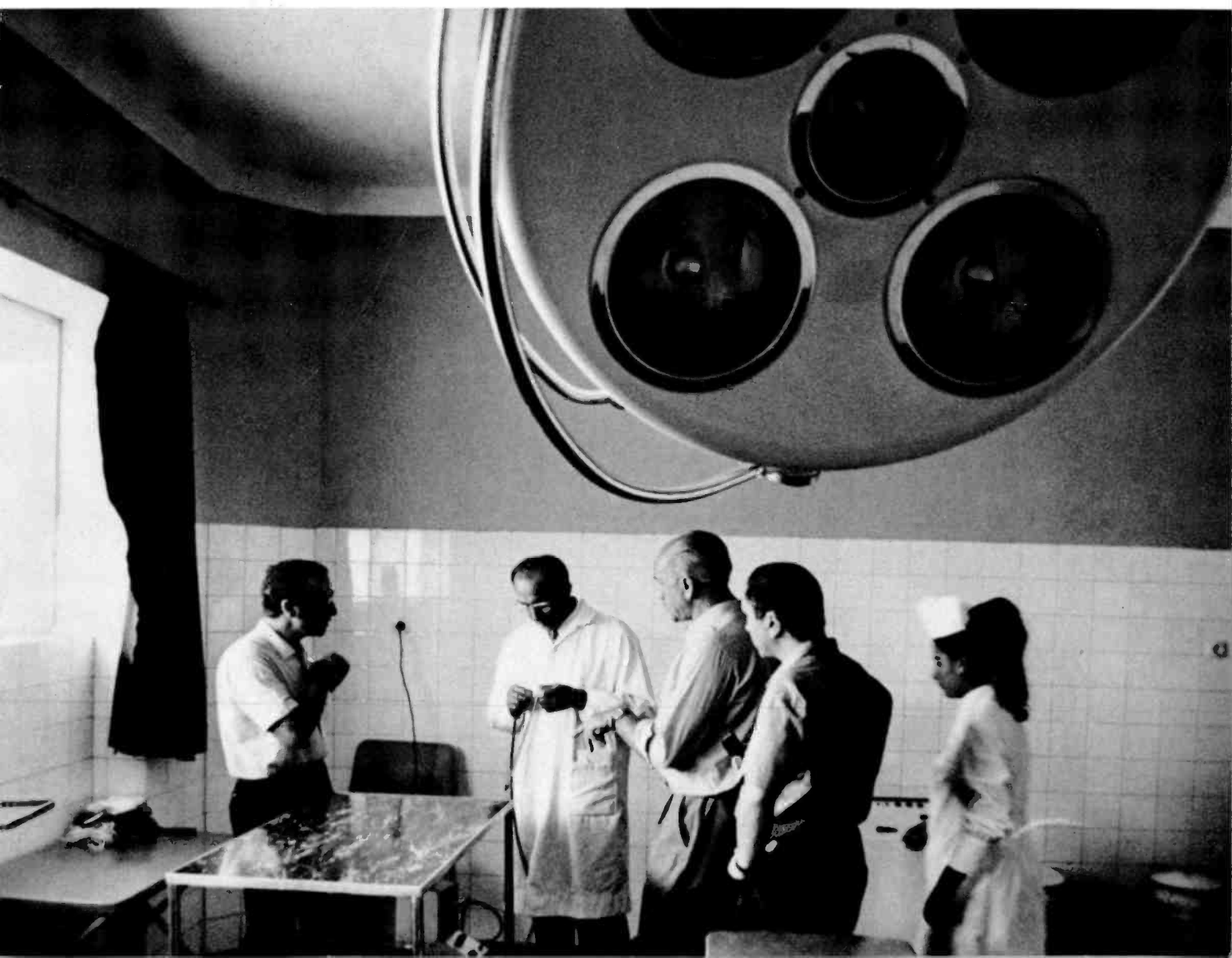


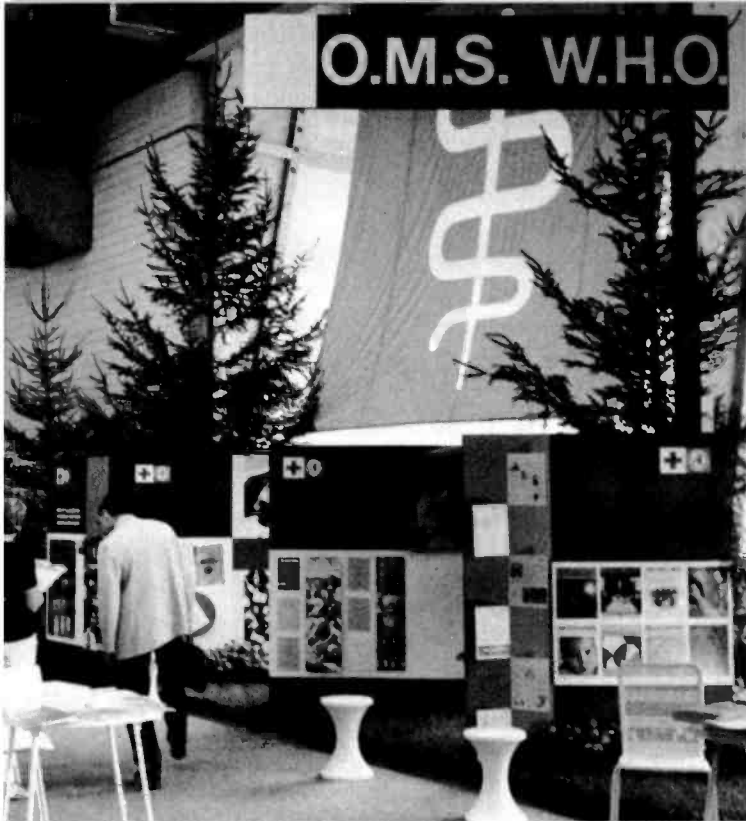
1

CANCER IN IRAN

A study of oesophageal cancer in three geographically and climatically distinct regions in the north of Iran is being sponsored by the International Agency for Research on Cancer (IARC), Lyons, France, in the hope of discovering the environmental factors responsible for the wide differences observed in its prevalence.

1. Nomads in the semi-desert inland region where the incidence of oesophageal cancer is between 50 and 70 per 100 000.
2. In the well-watered area of the Caspian sea-coast the incidence is only 6 per 100 000.
3. In an intermediate region to the east with some rainfall the incidence is about 15 persons per 100 000.
4. Iranian and IARC collaborators discuss the use of different types of oesophagoscopes.





1

PUBLIC INFORMATION

1. An exhibit at the 30th International Congress of Pharmaceutical Sciences organized by the International Pharmaceutical Federation in Geneva in September 1970.

2. World Health Day posters were widely distributed, and many were displayed in pharmacies.

3. An exhibit on family planning set up at the WHO Regional Office for South-East Asia in June for a meeting on maternal and child health and family planning services in India.

2



3



ischaemic heart disease among them. In the continuation of the collaborative study of the mechanism of adaptation to high altitude being conducted by institutes in Bolivia, Peru and Switzerland, evidence was acquired indicating that adaptation of the heart to lower oxygen concentration occurs at the myocardial cell level and that heart metabolism in persons living at high elevations seems to be similar to that of the fetal heart.

An essential element of community cardiovascular disease control programmes is education of the lay public. During the year a number of broadcasts on

how to prevent cardiovascular diseases were made in the radio series *Around the World with WHO*, and an issue of *World Health* published at the time of the VI World Congress of Cardiology was devoted to ischaemic heart disease and cerebrovascular disease.

As in previous years, the Organization enjoyed close co-operation with the International Society of Cardiology and its scientific councils. WHO assisted the Society in the preparation of the VI World Congress of Cardiology, held in September, and of European Heart Week to be observed early in 1971.

CHAPTER 4

ENVIRONMENTAL HEALTH

The Twenty-third World Health Assembly expressed concern about the influence of environmental factors on human health and stressed the urgent need for a worldwide system of surveillance and monitoring in this field. The Director-General was asked to prepare a long-term programme in environmental health, giving due consideration to water, soil, food and air pollution, noise and other environmental factors harmful to human health and to the need for environmental health criteria and guidelines for preventive measures.

The Organization intensified its studies of environmental health problems so as to give greater prominence to human ecology. A symposium on criteria for air quality was held and a study on health criteria for urban planning was prepared for consideration by a scientific group on the subject in 1971. Regional programmes in pollution control were extended, the network of reference centres and collaborating laboratories working in various branches of environmental health, in particular the monitoring of air pollution (see page 54), was expanded, the systematic collection of data on air quality was initiated, and research on the management of domestic and industrial wastes was increased.

The number of pre-investment projects for community water supply and wastes disposal financed from the Special Fund component of the United Nations Development Programme, with WHO as executing agency, continued to increase during the year. Because of the growth of the Organization's activities in this field and the consequent need for a wider measure of co-operation with the International Bank for Reconstruction and Development, the regional development banks and bilateral assistance agencies, these activities have been separated from the more general programme dealing with community water supply and wastes disposal.

Environmental Pollution

Man relies on the dispersing, diluting and stabilizing capacities of air, water and soil to assimilate wastes and maintain the environmental balance necessary to support life and promote his well-being. To the known pollutants such as the human wastes and the

particulate matter and gases from the combustion of fuel are added discharges from industry of a variety of residues of ever-increasing chemical complexity. Some wastes are returned to the natural cycle by the environmental self-purification processes, others are not. Some pollutants, such as pesticides, mercury and also some micro-organisms and radionuclides, are incorporated in the food chain and their concentrations may be increased a thousandfold. When the waste products are discharged at a rate that overwhelms or renders inoperative the natural forces of dispersion, dilution and decomposition, they make the environment unfavourable for human health and welfare. During the last few years the general public has become progressively aware of the dangers of pollution and the governments of both developed and developing countries are making efforts to establish monitoring systems, to enact basic legislation and to initiate national programmes for pollution control.

The increasing number of requests from Member States for assistance in environmental pollution control has led the Organization to extend the scope of its regional programmes. The adverse effect of environmental degradation on social and economic development was considered by the Regional Committee for the Western Pacific in 1970. In the European Region a long-term programme for environmental pollution control is being put into effect, following its approval by the Regional Committee in 1969.

The wish of governments to improve environmental quality is also reflected in their interest in the environmental pollution control projects financed from the Special Fund component of the United Nations Development Programme (UNDP). In 1970 WHO assisted a number of countries in preparing requests for Special Fund support. In Israel, for example, the intention is to set up a research institute in environmental health to consolidate the existing programme in air pollution, noise abatement and environmental radiation control and to co-ordinate the water pollution research. The Government of Brazil has requested UNDP assistance for a complex long-term research and control project to deal with air, water and land pollution, including solid wastes disposal. In Czechoslovakia the plan of operation was signed and field work was started in a Special

Fund project, for which WHO is executing agency, to set up a federal research and development centre for environmental pollution control.

The Pan American Sanitary Engineering and Environmental Sciences Centre, established in Lima in 1968 with assistance from PAHO and WHO, has considerably extended its activities and is providing advisory services to Member countries in specialized fields of sanitary engineering and environmental health sciences, including air, water and land pollution. An important development was the decision taken at the request of a number of Latin American countries to expand the existing Pan American Air Pollution Surveillance Network (comprising numerous stations, financed by PAHO or by the governments, in 15 countries) to include the monitoring of water quality, pesticide levels and other changes in the environment that might adversely affect human health.

Although well-trained public health staff are essential for the implementation of national environmental health control programmes, most national training with respect to environmental pollution control is inadequate. To assist in remedying this situation an inter-regional training course on public health aspects of environmental pollution control was organized in Osaka, Japan, towards the end of the year. The main subjects covered were the establishment of systems for monitoring environmental quality, environmental quality criteria, guides and standards and modern trends in environmental pollution control, including legislation. General aspects of environmental pollution and its impact on public health were dealt with first, followed by special topics, including air, water and land pollution, pesticides and physical pollutants, ionizing and other forms of radiation, and community noise.

Water Pollution

Three European countries—Hungary, Poland and Romania—received assistance from WHO in connexion with large-scale water pollution control programmes which are being financed from the Special Fund component of the United Nations Development Programme (UNDP) or for which such financing has been sought. WHO co-operated with the Government of Hungary in preparing a request to the UNDP Governing Council for support in establishing pilot zones for water quality control, as a first step in the planning of a long-term national programme for the protection of the population and its water resources. In Romania, the first phase was initiated for a project to cover both air and water pollution control. In the programme in Poland for the protection of river

waters from pollution an operational research study has led to proposals for solving the problem of saline water pollution in Upper Silesia. Progress during its four years of operation was assessed during the year and a possible extension envisaged. This would be linked with a programme, assisted by the United Nations, for the planning of the development of the Vistula river system. To meet immediate needs, the United Nations has sub-contracted to WHO the sections dealing with water pollution and quality, particularly with regard to thermal and other industrial pollution.

Assistance on various aspects of water pollution control was provided to countries in all Regions, including Argentina, China (Taiwan), Ethiopia, India, Lebanon and Thailand. Advice was given in China (Taiwan) on pollution of water from industry and in Lebanon on the effects of sewage effluents on the groundwater that may affect drinking-water quality in Beirut. Regional water pollution problems and their public health implications were discussed at two meetings sponsored by the Organization: a symposium held in Caracas in August and a seminar in Bangkok in November. In the European Region, as part of the long-term regional programme, several studies on water pollution control were started, dealing with health hazards from persistent pollutants, analytical methods and the improvement of sampling programmes.

WHO's participation in the International Hydrological Decade—a programme, under UNESCO auspices, designed to stimulate national research on water resources—was intensified during the year following the decision that WHO should provide the technical secretariat for the Working Group on Hydrological Aspects of Natural and Artificial Changes in Water Quality. One of the Group's first tasks is to prepare a practical handbook on the hydrological measurements needed in water quality surveys.

Research on the capacity of soil to receive inorganic chemical pollutants was started during the year by an institute in France, with support from WHO. The physico-chemical reactions of various types of soil are to be studied, as well as their capacity for retaining inorganic pollutants of health significance from wastes or heavily polluted waters.

For the many metropolitan areas that are near the sea, marine disposal, if it is properly conducted and supervised by trained staff, offers a relatively inexpensive solution to the problems of city wastes. The training needed goes well beyond traditional sanitary engineering education and practice. WHO is assisting several countries with programmes involving the marine disposal of waste from large cities, including

Accra, Istanbul and Manila, in projects financed in part from the Special Fund component of UNDP. For countries receiving this assistance and for others likely to face similar problems in the future an inter-regional course on coastal water pollution control was organized in Copenhagen and Aarhus, in co-operation with the Danish International Development Agency. Hydrological conditions in estuaries and coastal waters, biological and chemical processes by which wastes are assimilated in the marine environment and public health aspects of coastal pollution, as well as diffuser design, outfall location and other sanitary engineering and related economic problems were dealt with in lectures, surveys of coastal areas around Denmark, laboratory exercises and seminars.

WHO participated in the FAO Technical Conference on Marine Pollution and the Effects on Living Resources and Fishing and presented papers in the sections dealing with the technical aspects of measuring pollution and with the effects of pollutants on the quality of marine products. The problem of the toxicity of marine organisms due to pollutants is an extremely complex one. Most of the world's marine food products are found in tropical waters around islands—probably not more than 10 per cent. of the total ocean area—which are also those most susceptible to pollution. Some of the most dangerous pollutants involve such materials as compounds of antimony, arsenic, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, selenium, tin and zinc, and also raw mineral oil and petrochemicals and pesticides (see also page 97). Some pollutants persist for a long time and accumulate in marine organisms and thus may enter the food chain and achieve a concentration many times greater than that originally present in the sea water.

Air Pollution

One of the main developments in the Organization's programme in air pollution was the start towards the end of the year of the operative phase of the international monitoring programme to ascertain levels and trends in urban air pollution throughout the world. This will be the first time that such data are assembled on a global scale. Initially, concentrations of sulfur dioxide and suspended particulate matter will be measured; later the scheme may be extended to other pollutants of particular local importance. The pro-

gramme is conducted through a network of international, regional and national reference centres, laboratories and monitoring stations, including the stations in the Pan American Air Pollution Surveillance Network (see page 53). Following the recommendations made by the directors of the reference centres in October 1969, two additional reference centres in (Rockville, Md., USA, and Tokyo) and 11 collaborating laboratories were established in 1970. The network now embraces some 30 countries and territories.

Monographs prepared with the assistance of the International Reference Centre in London, on methods of measuring sulfuric acid aerosol, sulfur dioxide, carbon monoxide, particulate matter in town air and oxides of nitrogen were distributed to a number of WHO collaborating laboratories for use and further comments. The methods described are those that give reliable results and are applicable even in modestly equipped laboratories. The Centre also continued research into the nature and the health effects of air pollutants. It is difficult to relate the development of bronchitis, lung cancer or any other chronic disease to air pollution since many other factors are involved, and ideally a population should be followed through from birth to death. In a long-term study undertaken by the Centre the results obtained so far have shown a striking relationship between the estimated exposure to pollution and the incidence of lower respiratory tract infections, even as early as the age of nine months. These effects persist up to school-leaving age, which suggests that some damage—which may have lasting effects—may be done by pollution during early life. Further work was also done on the etiology of bronchitis to clarify the effect of air pollutants on infection of the respiratory tract.

Present knowledge of air pollution exposure and the associated effects on human health and the environment were discussed at a symposium on air quality criteria and guides, held in Geneva in October. The accomplishments in different countries were reviewed and recommendations were made for research on the effects of insufficiently known pollutants. Other subjects discussed included the combined effects of chemical and microbiological pollutants, air-borne allergens, methods for determining the dose-response relationship for odorous substances and toxicological methods for studying persistent air pollutants, such as lead.

Assistance was provided to a number of countries in establishing national programmes for air pollution

control: to Chile, for example, in planning a national air pollution survey programme; to Japan, on technical aspects of the air pollution control programme; and to Singapore on the establishment of monitoring stations, laboratory testing procedures, and noise abatement, particularly with regard to the siting of air-strips.

WHO co-operated with WMO in preparing for publication the two volumes containing the proceedings of a symposium on urban climates and building climatology, which had been jointly sponsored by the two organizations in 1968.¹ The first volume contains several papers presented by WHO on air pollution problems in urban areas; the second deals with various meteorological and climatic factors in relation to urban planning and the design of buildings.

Environmental Radioactivity

Countries are increasingly turning to nuclear energy for the generation of electrical power. It is expected that within five years the total installed nuclear power capacity will exceed 100 000 MWe, produced by some 200 power reactors in about 20 countries; and that by 1980 it will have reached 300 000 MWe in more than 30 countries. For each megawatt of electricity produced in a power reactor about four grams of uranium are consumed daily, with a corresponding amount of radioactive waste fission products. After a few months of operation one 1000 MWe reactor would therefore accumulate many thousands of millions of curies of fission products. In some countries the spent fuel is stored indefinitely. In others it is processed to separate the wastes, for which three methods of disposal are currently used: storage of high-activity wastes as liquids in underground concrete-shielded steel tanks; disposal of low-activity liquid wastes into the environment after treatment and dilution; and storage of waste containing short-lived radionuclides released from operating reactors until the radioactivity has decayed to an undetectable level so that it can be discharged as non-active effluent. The tritium and gaseous wastes such as krypton-85 and argon-41 are now discharged into the atmosphere. As power reactors increase in size and number, the gaseous wastes will have to be disposed of in a different way. Special problems may arise with regard to tritium released as tritiated water, which may accumulate in living

organisms. This is not an immediate hazard, but the total amounts of tritium released by future large-capacity reprocessing plants will be far too great for the present method of disposal. These and other problems of radioactive waste disposal are the subject of a report published during the year.²

The study, initiated by WHO in 1968, of the comparative hazards to the public of pollution from conventional and from nuclear power plants was continued. A major difficulty in making this comparison results from the basic differences in the criteria adopted for measuring exposure to pollutants emitted by the two types of plant. Most of the criteria for measuring chemical pollutants take into account the short-term health effects only, while the radiation exposure criteria are based primarily on long-term and possible genetic effects. A first task is therefore to establish rational indices for comparing the hazards from nuclear and conventional power plants. As nuclear power production becomes economically competitive with fossil fuel, public health considerations may play an important role in decisions on the kind of plant to construct.

The increasing application of nuclear energy in various civilian activities must be accompanied by the establishment of facilities for checking radioactivity in the environment. The basic principles for establishing centralized and regional laboratory services for routine environmental radiation surveillance programmes are outlined in a publication issued during the year.³

A study of the methods in current use for measuring selected radionuclides in environmental samples, including food samples, was undertaken by the WHO International Reference Centre on Environmental Radiation, Le Vésinet, France. As a first step, samples of milk with different levels of contamination by strontium-90 and cesium-137 were distributed for analysis to the 10 laboratories collaborating in the study in order to ascertain to what extent measurements at the different centres are comparable.

There was again close co-operation with the International Atomic Energy Agency. WHO was represented at a number of meetings organized by IAEA, including those of the Panel on the Review of the Agency's Regulations for the Safe Transport of Radioactive Materials and the Panel on Peaceful Uses of Nuclear Explosions. WHO also participated in symposia organized by IAEA on developments in the

¹ World Meteorological Organization (1970) *Urban climates (Technical Note No. 108)*, Geneva; World Meteorological Organization (1970) *Building climatology (Technical Note No. 109)*, Geneva.

² Straub, C. P. (1970) *Public health implications of radioactive waste releases*, Geneva, World Health Organization.

³ Kamath, P. R. (1970) *Environmental radiation surveillance laboratory*, Geneva, World Health Organization.

management of low and intermediate levels of radioactive wastes and on the uses of nuclear techniques in the measurement and control of environmental pollution.

Community Water Supply

The main aims of the Organization's community water supply programme are to assist developing countries through pre-investment surveys, help with the planning and implementation of national water supply programmes and the installation of rural water supplies, and encourage research and development.

An increasing number of governments are seeking the Organization's assistance for pre-investment surveys, including preliminary engineering, financial and economic viability studies. The number of such surveys financed from the Special Fund component of the United Nations Development Programme (UNDP), with WHO as executing agency, increased from eight in 1969 to 13 in 1970, new projects starting in Algeria, Cambodia, the Ivory Coast, Nepal and Yemen, in addition to those already under way in Ceylon, Ghana, Malta, Morocco, Senegal, Surinam, Turkey and Uganda (see page 126). Preparations were also made for a further 15 pre-investment surveys, and five of these are expected to become operational early in 1971.

National water supply programmes have two main features, which are sometimes combined but are often the responsibility of different ministries.

First, there is the operative programme, concerned with the planning, financing, design and construction of urban and rural water supplies, and with their maintenance and operation. WHO gives advice on all these phases, provides staff to work with the ministry concerned, and assists with the training of personnel.

The other main feature of national water supply programmes is the quality control of drinking-water. Increasing emphasis is being laid on this aspect, which is the responsibility of the ministry of health in most countries.

The new methods and improved techniques developed in recent years for the examination of drinking-water, as well as changes in concepts of permissible levels with regard to quality, have necessitated a revision of the *European Standards for Drinking-Water*, first published in 1961. The second edition, published during 1970,¹ includes new sections dealing

with viruses, polycyclic aromatic hydrocarbons, pesticides, radiological examination, and the examination of biological material and extractable organic matter.

WHO-assisted research is being carried out on methods and procedures for the surveillance of drinking-water quality, to provide guidelines applicable in developing countries. The wider use of field testing kits based on membrane-filter techniques is being encouraged, especially in those areas where laboratory facilities are inadequate or where transport of samples from the field to the laboratory is difficult.

Most WHO-assisted rural water supply programmes are implemented in collaboration with UNICEF. In 1970 jointly assisted programmes were in operation in some 70 developing countries and territories. Imported materials and equipment are provided by UNICEF and locally available materials and transport by the government; WHO field staff assist with the planning, design and supervision of construction, and the villagers themselves supply the labour. Hitherto the two organizations have assisted only the pilot phase, when the projects are essentially of a demonstration and training nature, and the assistance has been planned to phase out within a few years as the appropriate government department assumes increasing responsibility. During 1970, however, a new element was introduced in the programme in India where, following a joint study by the two organizations, assistance is being given for the exploitation of ground-water to provide water supplies to villages in areas particularly vulnerable to drought. Drilling and geophysical equipment to the value of some US \$1.7 million has been supplied to the Government by UNICEF, and further equipment to the value of US \$2.2 million is expected to be provided over the next three years. WHO is giving technical advice for the drilling programme, and assistance for the training of operators for the new equipment.

In addition, WHO is assisting two rural water supply projects—in Ghana and Iraq—that are financed from the Special Fund component of UNDP, and one—in Kenya—that is receiving bilateral assistance from Sweden. Also in Kenya is a small-scale project for the provision of water supplies to three villages, with imported equipment provided by voluntary contributions from the WHO Staff Association at headquarters in Geneva and local materials and labour supplied by the villagers.

An international conference on research and development in community water supply, jointly sponsored by WHO and the Governments of Yugoslavia and the United States of America, was held in Dubrovnik, Yugoslavia, in October. Representatives of institutions

¹ World Health Organization (1970) *European standards for drinking-water*, 2nd ed., Geneva.

engaged in research and development in the field of community water supply in 27 countries considered the role of the institutions in relation to the needs of the developing and the industrialized countries, discussing *inter alia* the development and testing of standardized and simplified methods and equipment, and the encouragement of the control of drinking-water standards and of the materials used. They also discussed the staff, training, equipment and information requirements of the institutions, and suggested ways in which WHO and the International Reference Centre on Community Water Supply, at the Hague, might best support their work.

WHO-sponsored studies were continued on the possible toxicity of new water supply materials, the comparative testing of hand-pumps, and the development of simple methods for treating water supplies for small communities. Research was started on the feasibility of using biological processes to remove from water naturally occurring deleterious minerals, such as sulfate salts. Preparatory work was also begun on a study of the relationship between water quality and certain cardiovascular diseases.

Sanitation Services and Housing

WHO's work in sanitation services and housing aims at helping countries with the environmental health side of their public health and overall development programmes. This entails studies of general environmental health problems and assistance to governments in strengthening services, planning and implementing programmes and making the best use of the available manpower.

A start was made in 1970 on the collection of material for a guide on environmental health planning, as recommended by the WHO Expert Committee on the Planning, Organization and Administration of National Environmental Health Programmes¹ that met in 1969. Assistance was given to the ministries of health of some 90 countries for the planning and development of programmes.

In a publication entitled *The Education and Training of Engineers for Environmental Health*,² which appeared during the year, guidelines are given for the education of the kind of engineer needed for environmental health work in the last third of the twentieth century. This publication is the outcome of a study undertaken by WHO following the meeting of the WHO Expert

Committee on the Education of Engineers in Environmental Health³ in 1967.

An inter-regional centre for the training of French-speaking sanitary engineers, established jointly by the Government of Morocco and WHO at the Mohammedia School of Engineers, University of Rabat, completed its first academic year in June 1970. To date, WHO has awarded 16 five-year fellowships to enable students from countries in the African, European, Eastern Mediterranean and Western Pacific Regions to have basic training at the University's civil engineering school before specializing in sanitary engineering. The first annual postgraduate course in sanitary engineering at the centre was inaugurated in 1970, and seven fellowships were awarded by WHO to qualified civil engineers from Algeria, the Democratic Republic of the Congo, Lebanon and Tunisia to permit them to take part. WHO is providing the civil engineering school of the University of Rabat with the services of three full-time professors, laboratory equipment and materials, and books, films and other technical documentation.

The Government of Switzerland is co-operating with the Government of Guatemala in helping the Regional Graduate School of Sanitary Engineering, University of San Carlos, Guatemala, to extend its programme—particularly in water supply and treatment and in water pollution control—so that it can provide postgraduate training for nationals of the Central American countries. At the request of the two governments, WHO has acted as intermediary in arranging for this collaborative project and will assist in its administration through the Pan American Sanitary Bureau/WHO Regional Office for the Americas.

A study of the environmental health aspects of urban planning was undertaken by a physician, a sanitary engineer and an architect/urban planner, who reviewed planning criteria based on experience in different parts of the world and ways in which those could be applied on the local, national and regional levels. The study will serve as a basis for discussion in 1971 by a scientific group on the development of environmental health criteria for urban planning.

At a number of meetings on housing and urban planning organized by the United Nations and various non-governmental agencies, WHO representatives drew attention to the environmental health aspects of the topics discussed. These meetings included inter-regional seminars organized by the United Nations on improvement of slums and uncontrolled settlements (Medellín, Colombia) and on physical planning for

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 439.

² *The education and training of engineers for environmental health*, by various authors (1970), Geneva, World Health Organization.

³ *Wld Hlth Org. techn. Rep. Ser.*, 1967, No. 376.

tourism development (Dubrovnik, Yugoslavia); the Second Symposium on Urban Renewal organized by the Economic Commission for Europe (Budapest); meetings of the International Association for Rural Housing and the Inter-American Association for Rural Housing (Caracas); the Thirtieth World Congress of the International Federation for Housing and Planning (Barcelona, Spain); and a conference on health research on housing and its environment, sponsored by the American Public Health Association (Warrington, Va., USA).

The WHO sanitary engineer attached to the Economic Commission for Africa took an active part in the Commission's housing and other planning activities, including training courses for building contractors in six West African countries and meetings on building costs and rural housing.

Wastes Disposal

In view of the rapid growth in population density in many areas as a result of urbanization, industrialization and technological development, the disposal of liquid and solid wastes has become a vast and complicated problem with serious health implications that are causing growing concern.

The satisfactory disposal of industrial wastes is becoming increasingly difficult, especially in the developing countries, where there is a lack of qualified personnel. In order to help governments in the planning and implementation of programmes in this respect, the Organization is preparing a series of guides covering the most important industries in developing countries. The first of these, evaluating the problem in general terms, was issued during 1970. The Organization has also maintained contact with the United Nations Industrial Development Organization with a view to ensuring that adequate consideration is given to public health aspects of industrial waste problems in development projects.

The disposal of domestic sewage in congested and rapidly developing urban areas is another major problem. In many such areas engineering studies for sewerage systems have been carried out, but the projects are not being implemented because no satisfactory means of financing them have been found. In order to find ways of providing satisfactory interim facilities for sewage disposal, WHO carried out a study to identify the main aspects of the problem and the specific field investigations required. One example of possible interim measures is provided by the project in Ibadan, Nigeria, mentioned below.

The activities of the WHO International Reference Centre on Wastes Disposal, in Zurich, were expanded during 1970. The Centre, which is receiving consider-

able support from the Swiss Federal Government, has given priority to the development of information services, including the abstracting and dissemination of technical and scientific information, the compilation of thesauri of terms used with regard to liquid and solid wastes, and the preparation of a document on methods of sampling and analysing solid wastes. It has also continued research on the development of a simple and economical process for reducing the volume of solid wastes in households, and has made plans for the expansion of its training programme. Forty institutions in developed and developing countries are collaborating with the Centre.

During 1970 WHO was executing agency for five pre-investment projects for wastes disposal. The most advanced of these projects is in the Philippines, and the most recent is in Iran—for sewerage and drainage in Teheran. The others are in the Central African Republic, China (Taiwan) and Nigeria. All these projects are being financed from the Special Fund component of the United Nations Development Programme (UNDP).

The final report on the master plan for a sewerage system for the Manila metropolitan area was submitted to the Government of the Philippines towards the end of 1969.¹ UNDP provided further funds for the extension of the project during 1970, and WHO assisted the Government in the improvement of sewer repair and maintenance procedures, oceanographic studies, the development of standard designs for sewer structures, and detailed financial planning for the implementation of the first stage of construction. Legislative measures were initiated by the Government to set up an efficient administration for the implementation of the major sewerage improvements proposed under the master plan.

In the project for a sewerage system for the Taipei metropolitan area (see page 169) the final report on the master plan, covering the 50-year period beginning in 1970, was completed towards the end of the year.

Following the completion of the preliminary engineering and economic feasibility studies in the project for wastes disposal and drainage for Ibadan, Nigeria, it was recommended that, as a first step towards effecting urgently required sanitary improvements, buildings containing laundering, bathing and toilet facilities should be constructed, each unit serving about 200 persons. The first of these has been built, with labour provided by the local population and equipment supplied by the United States Agency for International Development. WHO provided a health educator to familiarize the public with sanitation pro-

¹ See *Off. Rec. Wld Hlth Org.*, 180, 145.

blems and advise on the co-ordination of the self-help activities. The Government has submitted a request to UNDP to extend its assistance to the project beyond the end of 1970, when the final report on the master plans and the proposals for the first stage of the sewerage and drainage construction were presented to the Government.

In the project in the Central African Republic for the development of sewerage and drainage for the city of Bangui, a comprehensive sanitary survey was made of the demonstration area, some preliminary construction work was undertaken, and a training course was organized for municipal sanitation workers.

The Organization also assisted Lebanon and Syria in the preparation of requests for assistance from the Special Fund component of UNDP for the development of a national plan for sewerage and solid wastes disposal for Lebanon, and a project for sewage disposal for Damascus. With regard to solid wastes disposal, assistance provided by the Organization included advice to Nepal for wastes disposal in the city of Kathmandu, and to Israel for a national survey on refuse disposal. Virtually all the WHO-assisted sanitary engineering projects include an element of sewerage, drainage or solid-wastes disposal planning.

CHAPTER 5

ORGANIZATION OF HEALTH SERVICES

Community Health Services

The WHO programme in relation to community health services covers the planning, development and organization of comprehensive health services, manpower planning and utilization, training and research.

Seventy-nine projects for the strengthening of health services received assistance from WHO in 1970; in-service training of various categories of professional and other health personnel was an important element in them. Following WHO inter-regional courses in health planning held in public health institutes in developing countries, all the Regions by 1970 either had established or were establishing their own regional courses adapted to their needs and levels of development. For example, preparations were made for an inter-regional course on health and manpower planning held in 1969 (in association with the School of Public Health, University of Teheran, and the Institute of National Planning, Cairo) to be repeated on a regional scale in 1971 as a collaborative undertaking between the Teheran School of Public Health and WHO. A measure of the impact of WHO training activities in the Eastern Mediterranean and Western Pacific Regions is that professors of health planning were appointed at the Schools of Public Health in Teheran and Manila.

In 1970 WHO concentrated on the training of teachers of the health professions, with the aim of introducing the principles of national health planning into the curricula of the teaching institutions.

A course, held in New Delhi in October and November, was therefore designed specifically for two classes of teachers: those in medical schools or institutions where postgraduate education is given in preventive and social medicine and public health; and those giving instruction in public health engineering and public health nursing.

Close relations were maintained with the three United Nations institutes for economic development and planning in Bangkok, Dakar and Santiago. The post of a WHO economist in the institute in Bangkok was established on a continuing basis. This WHO expert is closely associated with the training activities sponsored by the institute, as is a WHO public health administrator.

WHO collaborated with the International Union of Architects and the International Hospital Federation in organizing the third international public health seminar on methods of planning for hospital and other health institutions, held in October. The Organization provided fellowships for participants from the six Regions, assisted in both the preparation and the conduct of the seminar, compiled bibliographical reference lists on the various subjects covered, and provided lectures and instruction.

During the year, WHO provided assistance in the planning and organization of their community health services to a number of countries, including Barbados, Brazil, Burma, Ceylon, Ethiopia, Indonesia, Republic of Korea, Laos, Libya, Thailand and Zambia.

In 1970, 118 countries were reported as having formulated plans for economic and social development, and 103 of these had a health component. This may be compared with the period 1961-1964, when 75 countries had prepared or were preparing a national health plan as part of their economic and social planning. In most of the countries WHO has assisted or is assisting not only in the preparation and implementation of the health plans but also in periodic review of the development of the programme.

Evaluation is an important element of the planning process, enabling errors to be corrected, new techniques to be introduced, and modifications to be made on the basis of experience gained as implementation of the plan proceeds. In 1970 WHO began an evaluation of health plans that had been prepared by Gabon, Liberia, Mali, Niger and Sierra Leone with its own assistance and that of the United States Agency for International Development. In order that the evaluation should cover both the health and the economic aspects, it was carried out by teams composed of a public health administrator and a public administration/management specialist. WHO also provided help in assessing the progress of basic health services programmes in China (Taiwan) and Venezuela.

Another important element in health planning is costing of the various activities involved, taking into account capital and recurrent expenditure. In Singapore WHO helped to set up a cost-accounting system for the Ministry of Health.

Several countries received WHO assistance in manpower planning. Particular mention may be made of Algeria, Argentina and Chile.

With the increase of medical care costs everywhere, the need for sound organization aiming at a more satisfactory cost-effectiveness ratio was felt in many countries, in relation both to ambulatory care and to hospital care organization. WHO assisted the Democratic Republic of the Congo, Honduras and Malaysia in the organization of medical care services, Indonesia in the organization of health centres, and Barbados and Ethiopia in hospital planning and administration. Nigeria received advice on hospital architecture and Venezuela on hospital maintenance and engineering.

A joint ILO/WHO committee that met in November discussed means of co-ordinating medical care services, including personal preventive care and rehabilitation services, and social security programmes. It reviewed interrelationships between personal health and social security services and examined the question of co-ordination and planning of personal health services and the training of staff for the planning, organization and administration of those services.

A scientific group on the development of studies in health manpower met in Geneva in November. It reviewed studies on manpower planning and utilization in relation to national health programmes, including appraisal of the methodologies utilized, analysis of the functions of various categories of personnel in public health programmes at all levels, and the projection of manpower requirements. It also made recommendations on research and on future activities in the field of health manpower planning.

The growing importance of rehabilitation is shown by WHO assistance to Argentina, Brazil, Ceylon, Chile, China (Taiwan), Democratic Republic of the Congo, India, Iran, Jordan, Laos, Lebanon, Liberia, Pakistan, Peru, Thailand, United Arab Republic and Venezuela in relation to, for example, physiatry, physiotherapy, occupational therapy and prosthetic services. An *ad hoc* inter-agency meeting on rehabilitation of the disabled was held in September in Geneva with the participation of the United Nations, ILO, UNESCO, UNICEF, WHO and the Council of World Organizations Interested in the Handicapped. Inter-agency co-operation in the field of rehabilitation services and the projects currently receiving assistance were discussed during the meeting.

WHO also assisted in the preparation of a course organized by the Institute of Rehabilitation, Konstanin, Poland, in October and November. The aim was to train orthopaedic surgeons in the medical rehabili-

tation of traumatic cases, and WHO helped with the course outline and provided fellowships for participants and a lecturer.

A questionnaire for an inter-agency comparative study on the legislation, organization and administration of rehabilitation services for the disabled was prepared jointly by the United Nations, ILO and WHO and sent to 62 selected countries. The aim of this questionnaire is to obtain basic new information on rehabilitation services to enable those organizations to plan their programmes more efficiently.

Research was promoted in many aspects of community health services, manpower planning and utilization, the training requirements of various categories of health personnel and the economics of health.

Research in public health practice initiated at the end of 1969 in Brazil, Hungary and the United Arab Republic was pursued with a view to drawing up post descriptions for professional and auxiliary personnel and adapting their training to the needs of the population and the health services.

The study of different organizational patterns for the provision of personal health care was extended to a sixth country, Malaysia. Data received from Israel are being processed. Preliminary results were received from Belgium.

The international study on hospital utilization in six European countries and in selected areas in two other countries was continued. The computer printouts for Finland were received and are being studied. The final tabular models for the purpose of international comparisons are now being elaborated.

As part of a study of community health centres, a review was prepared of the literature on the evaluation of community health centre practice and of evaluation methods. The specific objectives and a research protocol are being elaborated.

Twenty-five institutions participated in an assessment of diagnostic criteria for connective tissue diseases being carried out by the WHO International Reference Centre for the Study of Connective Tissue Diseases, Paris. Detailed retrospective and prospective studies were made of patients and suspected patients in accordance with a research protocol drawn up by WHO.

WHO participated in the meeting of the ACC Sub-Committee on Human Resources, Education and Training held in Geneva in March. It also collaborated in a United Nations inter-regional course in social planning, held in Amsterdam in April, and was represented at the seventeenth session of the ACC Working Group on Rural and Community Develop-

ment, which discussed ways and means of improving and strengthening integrated rural development procedures.

Advice and help were given in relation to the health of refugees in a number of settlements organized by the Office of the United Nations High Commissioner for Refugees.

Nursing

During 1970 the Organization provided assistance in the field of nursing to 102 countries; the total number of projects was 223, of which 37 were inter-country. Most were focused on education and training.

WHO-assisted basic nursing education programmes were in operation in all the Regions. In the African Region alone there were 24 projects for the training of nurses at state diploma level; by the end of 1970 a total of more than 6000 nurses had successfully completed training since the beginning of these projects. The Organization also assisted basic nursing education programmes at university level in 15 countries.

Assistance was continued for the development of post-basic education programmes designed to prepare nurses for teaching and administrative posts, public health nursing, and specialization in various clinical fields. In the African Region post-basic training was continued in Senegal at Dakar, where the first class of 19 nurses and midwives from eight French-speaking countries in the Region graduated, and a second class completed the first year of studies. Similar training was provided at the University of Ibadan, in Nigeria, for students from English-speaking countries. WHO also assisted post-basic training in Kenya, and at the University of Ghana, where five nurses completed their studies, making a total of 57 trained there since 1963. Similar assistance was provided to Iran, Israel, Tunisia and the United Arab Republic in the Eastern Mediterranean Region. In the South-East Asia Region 30 nurses were granted the B.Ed. degree in Thailand, on completion of a course at Chulalongkorn University for the preparation of nurse teachers. In India 40 nurses received a B.Sc. degree in nursing at Ahmedabad, Chandigarh and Madras, 15 students were admitted to the two-year post-basic programme in Bombay, and eight nurses received a Master's degree in nursing at the end of a two-year course at the College of Nursing in New Delhi. In the Western Pacific Region the WHO-assisted courses at the University of Malaya were continued, and the Organization provided fellowships to nurses from a number of countries for post-basic education.

The inter-regional programme for the preparation of French-speaking nurses and midwives for WHO assignments was also continued. Twenty-one nurses have been trained in this project since it was begun in 1964.

A difficulty confronting many nurses seeking higher qualifications is their lack of the secondary education required for admission to regular post-basic courses. To help nurses in the South-East Asia Region in this respect, the Organization has assisted in the establishment of a training centre for nurses in Wellington, New Zealand (see page 140).

The severe lack of qualified teaching staff is a major obstacle to the provision of sound training in nursing for the increasing numbers of students. A large proportion of teachers have had no training in teaching methods, and many are not of the nursing profession. In addition to the above-mentioned assistance provided for long-term post-basic courses for teachers, several WHO-assisted projects were concerned with teaching methods. One example is the course held in Lyons, France, for countries of the European Region (see page 236).

An aspect that received particular attention in WHO-assisted projects in many countries was the planning and revision of curricula adapted to countries' specific needs. In the Republic of Korea, for example, members of the teaching staff of 26 schools of nursing took part in five workshops on the revision of curricula, in preparation for a national seminar on the subject. Directors and teachers from schools of nursing in the African Region met in Brazzaville in July to discuss ways in which countries might develop systems of nursing education adapted to their individual needs and resources (see page 122).

To help improve the knowledge and skills of personnel employed in nursing, WHO assisted with the planning and organization of in-service training and short courses on various subjects. At the inter-regional level there was a six-week course held in Gentofte, Denmark, with the aim of preparing nurses to plan, organize and conduct in-service training in their own countries (see page 272), and a travelling seminar on nursing in the USSR (see page 273). At the regional level, two courses were held in the African Region at the English- and French-language training centres for health service personnel, in Lagos and Lomé. In the South-East Asia Region (see page 145) courses were organized on such subjects as clinical teaching of paediatric and surgical nursing, public health practice, guidance and counselling, ward administration, hospital housekeeping and communicable disease control. In addition, assistance for in-service training of nursing personnel was provided to many countries in most of the Regions—for

example, Afghanistan, where short courses similar to those in the South-East Asia Region were organized, and Malaysia, where advice was given on the preparation of nursing staff responsible for the planning and implementation of in-service training.

With the development and expansion of health services, particularly in rural areas, nursing and midwifery personnel trained to deliver general health care, both within and outside the hospital, will clearly play an increasingly important role. During 1970 the Organization provided some 90 nurses specialized in public health nursing to assist in over 40 projects for the development of health services. Attention was particularly directed to the strengthening of education of the public, communicable disease control, the care of the sick, and maternal and child health. An example of activities in the last-named field is the inter-regional seminar on the role of the midwife in maternal and child care, held in Kuala Lumpur in October (see page 270).

Increased emphasis has been given to the role of nursing and midwifery personnel in family planning. Nurses participated in several WHO-assisted courses in family planning, and a public health nurse was assigned to the inter-country family planning team in the South-East Asia Region. In many countries family planning is being included in basic curricula for nurses and midwives.

The Organization has helped in promoting midwifery education and services in all the Regions. In the Eastern Mediterranean Region, for example, assistance was provided to nine countries. In one of these—Somalia—a one-year course of training in midwifery has been developed for selected graduates from the school of nursing; on completion of the course the graduates will be the first in Somalia to receive full qualifications in both nursing and midwifery in their own country.

The training of personnel in the psychiatric and mental health aspects of nursing care has also received attention. Long-term WHO-assisted projects were continued in Iran, Kenya, Malta, Peru, Thailand and Venezuela, and the Organization also provided advice in this respect to Argentina, El Salvador, India and Uruguay.

In most countries the largest section of nursing manpower consists of auxiliary nurses and midwives, and training programmes for these categories of health workers form an important part of the Organization's work in all the Regions. In the Americas assistance was given for a study of the utilization and training of auxiliaries, the establishment of guidelines for the definition of functions and curriculum content, and the development of further education for nurses

who train auxiliaries. WHO also provided assistance to the Maldives for a one-year training course for nurses' aides and a series of three-month courses for indigenous midwives; to Yemen, for the training of auxiliary nurses and midwives at three centres; and to Afghanistan, for the establishment of the first residential school for auxiliary nurse/midwives in that country. A survey carried out in connexion with WHO-assisted training programmes in Morocco showed that the total number of auxiliaries had risen from 42 in 1956 to approximately 9000 in 1970—a ratio of nine auxiliaries to one qualified nurse.

The Organization assisted research into nursing services and education both by supporting specific studies and by helping to acquaint senior nursing personnel with research and survey methods. An example is the study carried out in Switzerland (see page 151). Work was started on the preparation of guidelines for the introduction of research concepts and methodology into programmes of basic, post-basic and advanced education for nurses. In addition, assistance was given for further research on the administration of medical and health services at the Latin American Centre for Medical Administration, in Buenos Aires.

With regard to health and manpower planning, WHO assisted studies of nursing needs and resources in a number of countries, including China (Taiwan), Equatorial Guinea, Gabon, Italy, Morocco, the Republic of Korea, Togo, Zambia and most countries in the Region of the Americas. A study on nursing personnel employed in hospitals in Thailand was completed, and the findings will serve as a basis for the improvement of nursing education and services in that country. Following the seminar on nursing studies held in the Western Pacific Region in 1969, the Organization assisted countries that had been represented at the seminar with the planning of field studies on nursing manpower. A manual on the research process, developed during the seminar and tested in the field in 1970 prior to publication, served as a useful tool in this connexion. The nursing manpower needs of the Eastern Mediterranean Region, and ways in which WHO might help meet those needs, were discussed at a meeting in Nicosia (see page 252). In the European Region the findings obtained in the first phase of a study on nursing resources and staffing patterns were discussed by a working group which met in Berne in December to consider recent trends in nursing services in Europe.

As a means of broadening the role and responsibilities of nurses in the planning of nursing services within the general context of national health planning, the Organization assisted in establishing or strengthening nursing units in national administrations in Cambodia, Cameroon, Morocco and Nepal, as well

as in several countries in the Caribbean and South Pacific areas, most of which now have a nursing division or unit at central level.

Health Education

During 1970 WHO assisted some 20 countries in the development of health education services as an integral part of their national health programmes. One example is Singapore, where the Organization helped to review health education activities in schools, maternal and child health centres and teaching institutions, and assisted in drawing up a long-term plan for education on the health aspects of industrialization and urbanization. Health authorities in most countries in the South-East Asia Region are now using the guidelines developed in 1967 at a WHO-sponsored workshop on methodology for the planning, implementation and evaluation of health education services.

Continued emphasis was laid on educational activities designed to foster public interest and participation in communicable disease control and other health programmes. Thus health education was included in WHO-assisted projects for malaria eradication in Afghanistan, India, Iran, Nepal, Nicaragua, Pakistan, Surinam and Turkey; community water supply and environmental health in Ghana, Guinea and Nigeria; the development of basic health services in the Democratic Republic of the Congo; smallpox eradication in Nepal; filariasis control in Ceylon; nutrition in Libya; and nursing and midwifery in Algeria and Morocco.

Expert committees have in the past repeatedly emphasized the essential role of health education in communicable disease control programmes. With regard to leprosy control, the WHO Expert Committee on Leprosy, at its meeting in June 1970, stressed the need for the enlightened support of the community as well as the active co-operation of individual patients and their families.¹

In co-operation with UNESCO and UNICEF, the Organization continued to assist in improving the health education aspects of school curricula and teacher training programmes. Countries receiving assistance in this field included Burma, Ghana, Indonesia, Nepal, Nigeria, Thailand and the United Arab Republic. A regional workshop was held in Bangkok to draw up guidelines for the promotion of school health education programmes in countries of the South-East Asia Region. In Nigeria, health education has been made a compulsory subject for the new certificate in education for primary school teachers, and several publications on health education have

been issued, including handbooks for teachers in primary schools and educational manuals on health and home science.

An interesting aspect of health education work in the African Region is the development of the use of mass media—for example, in Ghana, Nigeria and Uganda, where WHO provided assistance with regard to television and radio programmes on health subjects for schools and the general public.

WHO also continued to collaborate closely with UNESCO regarding the health component of literacy programmes, and was represented at the third meeting of the UNESCO panel for the evaluation of experimental literacy projects, held in Iran, and at an inter-agency meeting on work-oriented literacy, held in Paris in December 1970. It assisted in the development of the health aspects of the UNESCO-assisted work-oriented adult literacy project in Iran, and co-operated with the UNESCO-sponsored Arab States Functional Literacy Centre in the formulation of the health education content of its curricula.

Particular attention was paid to the incorporation of health education and related social sciences in the training of professional and auxiliary health workers. In the South-East Asia Region this included assistance to Burma, Indonesia and Nepal in the revision of curricula and the preparation of educational material. In addition, emphasis was laid on health education during a regional workshop—organized by WHO in Bangkok—on field practice in maternal and child health for medical students. In the African Region a 10-week course was held in Ghana to reorientate senior members of the health services in the health education aspects of their work, and in Nigeria and Uganda special courses were organized for supervisors and tutors of various categories of health personnel. In Brazil, where the year 1970 was designated “Health Education Year”, the Organization assisted with a national conference on health education for government health personnel.

Assistance was also provided for the establishment or strengthening of postgraduate training in health education in schools and national institutes of public health—for example, in Belgium, Brazil, Chile, the Republic of Viet-Nam and the United States of America.

With a view to stimulating the interest and participation of the local community in health programmes the Organization has laid emphasis on research on health education practice. It continued to assist studies on the facilities available for training professional workers in research on health education and provided a grant to the National Institute of Health Administration and Education in New Delhi for

¹*Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 459.

research on means of improving health education in health centres and teaching hospitals.

The VIII Central American Seminar on Health Education, jointly sponsored by the Organization and the Central American Health Council, was held in Panama in July. The seminar, which was attended by leading health education specialists as well as by representatives of various other disciplines, considered the application of social research to achieve more systematic planning and evaluation in health education.

The importance of education in the health aspects of family planning—stressed by the WHO Expert Committee on Family Planning in Health Services at its meeting in November—is being more and more widely recognized. A study group met in Geneva in December to review priority needs and objectives in this field and to consider means of strengthening the health education component of family planning programmes.

With the aid of the United Nations Fund for Population Activities, WHO assisted health education aspects of family health projects in China (Taiwan), India, Indonesia, Jamaica, and Trinidad and Tobago. It also provided a health education specialist for the inter-country family planning team in the South-East Asia Region. In China (Taiwan), El Salvador, India and Nepal WHO assisted in the development of family life education in schools and teacher training institutions.

The Organization co-operated with UNESCO in several activities in this field including, in Asia, a regional course on the production and use of mass media for family planning programmes, held in Seoul, and a regional workshop on population and family education, held in Bangkok. It also collaborated with ILO in the preparation of material for the health education of workers, including information on the health aspects of family planning.

During the discussions at the Twenty-third World Health Assembly on the health consequences of smoking, particular emphasis was laid on the importance of education, and in its resolution WHA23.32 the Assembly requested the Director-General to consider the educational methods that might be used to persuade young people not to begin smoking. In accordance with the Assembly's resolution, means of extending the Organization's work on preventive measures with regard to smoking were considered and a consultation on the subject was held in Geneva in November.

The Organization continued to co-operate with the International Union for Health Education and was represented at meetings of its Technical Development Committee.

Health Legislation

By the end of 1970 WHO had published 21 volumes of the *International Digest of Health Legislation*, containing in all some 9000 items of health legislation, 30 studies of comparative health legislation and reviews of hundreds of public health codes and specialized publications in this field. The fourth in the series of quinquennial indexes to the *Digest* was also published during the year.

The 500 or so items of legislation reproduced, translated or summarized in the *Digest* during the year derive from more than 70 countries and other jurisdictions and, as such, provide a useful pointer to the varying policies adopted at the national level to cope with a vast spectrum of health problems. Although such primary fields as communicable disease control, public health administration, food hygiene, control of pharmaceutical preparations, mental health, occupational health, radiation protection and training and professional practice of health personnel were again well represented in the *Digest*, the year saw an appreciable increase in the number of items, originating from both advanced and developing countries, devoted to environmental problems and problems which may be regarded as having a medical, ethical and social component.

In the first category the new Swedish Environmental Protection Law represents a landmark. Significant legislation on environmental hygiene has also been adopted in Honduras and Singapore, among other countries. Many States have introduced new or amended legislation on pesticides, in most cases providing for compulsory registration of these products. Certain texts deal specifically with aerial application of pesticides, others have imposed severe restrictions on the use of the chlorinated hydrocarbons. New or amended lists of residue tolerances have been issued in a number of European countries and in North America.

In the second category of problems on which particular emphasis is discernible, several countries (notably Canada, Denmark, Finland and Singapore) have adopted new legislation on abortion, sterilization or both. The legislation on abortion is discussed in detail in the survey of abortion laws referred to below. More of the Commonwealth countries have now introduced legislation on transplants (based to a greater or lesser extent on the Human Tissue Act 1961 of the United Kingdom).

In the more traditional areas of health legislation, various countries, including Honduras and Hungary, have promulgated texts in the field of communicable diseases; several African and South American countries, as well as Finland, France and Spain, have

introduced legislation in the field of national health administration. Both Canada and New Zealand have consolidated their food and drug legislation, while several countries (notably Brazil, Honduras and Iran) have adopted basic provisions dealing with foodstuffs alone. Several countries have prohibited the use of cyclamates as sweeteners or have imposed severe restrictions on their use. In drug legislation, apart from important general texts (as in Australia, Japan and Thailand), one continuing and noteworthy trend has been the adoption of stringent measures in regard to the hallucinogenic substances. Further legislation has appeared on the treatment of drug-dependent persons and/or alcoholics (e.g., in the Australian states of Tasmania and Victoria, where the two categories are dealt with together, and in Bulgaria, Hong Kong and Tunisia).

Increasing recognition of the hazards associated with certain paints has led to the adoption of special control measures, distinct from those in force in respect of poisons, in Australia (Tasmania and Western Australia) and Canada.

Many items of legislation on occupational health (Chile, Jamaica, Morocco and Nepal, *inter alia*) and radiation protection (Italy, the Republic of Viet-Nam, South Africa and the United Kingdom) were mentioned in the *Digest* during the year.

One interesting feature of legislation dealing with medical registration and practice, particularly in developed countries, is the inclusion of provisions on the recognition of foreign qualifications. Significant legislation in France, South Africa and Sweden on aspects of medical specialization was published, as were various texts on the training of physicians, dentists, pharmacists and other health professionals and numerous items on the training of auxiliaries (for example, in Hong Kong, Luxembourg, Mali, South Africa, the United Kingdom and Zambia).

The Peruvian Sanitary Code of 18 March 1969, and the USSR Law of 19 December 1969, embodying the fundamental principles of the health legislation of the USSR and the Union Republics, appeared in full (in English and French translations) in the *Digest* during the year.

Two comparative surveys of health legislation were issued in 1970: on the control of pesticides and on induced abortion. The first, an offprint of a survey published in the *Digest* in 1969, followed the publication of *Guidelines for Legislation concerning the Registration for Sale and Marketing of Pesticides*,¹

which had been prepared jointly by FAO, ILO and WHO. The survey reviews the legislation of 11 countries and describes the different ways of defining pesticides, the competent authorities on the subject, systems of approval or registration of pesticides, control of manufacture, supply and application, labelling, occupational health, aerial application of pesticides and other aspects of pesticides control, such as transport, handling of containers, prevention of pollution of the environment and the use of insecticides for domestic purposes.

The world survey on abortion legislation was undertaken because of the far-reaching changes occurring in many countries. Since the first enactments in this field, mostly in the Scandinavian countries before the Second World War, many countries have modified their former policy and are replacing the Penal Code provisions by health measures under the responsibility of the ministries of health. An example of this trend was the adoption of the Abortion Act 1967 in the United Kingdom.

The number of requests received from health authorities, universities and food and drug industries for information on specific aspects of legislation has steadily increased in recent years. Subjects on which information was provided in 1970 included: radiation protection, organ transplantation, salt iodization, compulsory immunization, birth control, abortion, medical ethics, cigarette advertising, treatment of drug-dependent persons, prescription of dangerous drugs by members of the dental profession, pesticide control, colouring substances in cosmetics, food-borne infections and intoxications, and governmental liability for adverse reactions occurring in official immunization programmes.

WHO activities in the field of health legislation include direct assistance to governments in the drafting or revision of their public health codes or legislation. In 1970, for example, assistance was provided to Afghanistan and Ghana in the revision of basic health legislation. For Afghanistan a series of draft laws was prepared covering the main aspects of public health. In Ghana, the work is proceeding in two stages: following its assistance in a study of existing legislation and the drafting of a bill on public health (dealing particularly with communicable diseases, quarantine and environmental sanitation), the Organization is co-operating with the health authorities in assessing the results achieved.

WHO was represented at the Second World Congress on Medical Law in Washington, D.C., in August, when organ transplantation legislation, definition of death, drug dependence, human experimentation, and birth control and abortion were among the subjects discussed.

¹ Food and Agriculture Organization (1969) *Guidelines for legislation concerning the registration for sale and marketing of pesticides*, Rome.

Health Laboratory Services

WHO's continued assistance to countries in the organization of laboratory services and their integration in the general health services covered not only public health laboratories, but also hospital laboratories and those engaged in vaccine and serum production and the control of food and water quality.

In addition to giving technical advice, the Organization promoted the training of all categories of laboratory staff, both through courses in the countries concerned and by means of fellowships and grants for study abroad. As an example, at the training centre for health service personnel in Lomé a three-year course for staff from African countries was started in November 1969 to prepare non-graduate certified (level B)¹ laboratory technicians, and in 1970 a one-year refresher course was organized for laboratory technicians already specialized in malaria and tuberculosis work to enable them to take part in other projects and perform a wider range of duties.

Seventy-eight countries and territories received assistance from WHO in the form of advisory services, personnel training and supplies of laboratory reagents and equipment. In all, 125 national and 22 inter-country projects concerned with laboratory services were supported by WHO: 57 were for the organization and development of general laboratory services, 49 were related to specific programmes on communicable diseases (such as smallpox, tuberculosis, parasitic diseases and virology), 18 to vaccine production and control, eight to food and drug control and three to blood transfusion and haematology. Courses were organized for laboratory personnel (mainly technicians) in Gabon, Jordan, Laos, Libya, Nigeria, Rwanda, Singapore, Somalia (see page 161), Togo, Turkey and Yemen; in addition, two regional training courses were held with participants from the Region of the Americas and the South-East Asia Region respectively.

Brunei and the Philippines were visited in connexion with a study on the workload and utilization of peripheral laboratories²—the first stage of an investigation that will eventually include laboratories at the central and intermediate levels.

Following a special study on the subject, in which WHO took an active part, the Committee of Ministers of the Council of Europe recommended to its member

governments that the training of level B laboratory technicians should be standardized and lead to a diploma that would be recognized by all the Council's member governments or their national authorities. The definition and training of level A (graduate) laboratory technicians were discussed by a working party of the Council of Europe, held in Strasbourg in October, and a report has been sent to the Council's member governments for consideration.

With the designation of national centres in India, Japan and Thailand, the network of blood transfusion and blood typing centres collaborating with the WHO International Blood Group Reference Laboratory, in London, was extended. Assistance was given for the organization of other national centres and of collaborative research in this field.

The WHO-supported International Committee for Standardization in Haematology has now established definitions for more than 100 terms in five languages; these were approved at the Congress of the International Society of Hematology in August.

WHO also supports the International Committee on Laboratory Animals. At meetings in April and October, at which WHO was represented, the Governing Board of this Committee decided to extend its activities, particularly in developing countries. It also decided to create a network of reference centres similar to those already designated by WHO in other fields.

Health Statistics

Collection and Use of Health Statistics

The computerization of data processing has not only enabled WHO to collate and disseminate information far more rapidly, but has also greatly extended its range of activities. Data on general mortality, morbidity and mortality from infectious diseases, health manpower and hospital services, for the period from 1955 to the present time, are being stored in the computer. Data banks are thus being developed so that information can be promptly supplied upon request.

In 1970, the publication of basic data on mortality from malignant neoplasms³ was one example of the service the Organization can now render to research

¹ The categories of technical laboratory personnel referred to here are those recommended by the WHO Expert Committee on Health Laboratory Services in its fourth report (*Wld Hlth Org. techn. Rep. Ser.*, 1966, No. 345, 5).

² See *Off. Rec. Wld Hlth Org.*, 180, 66.

³ World Health Organization (1970) *Mortality from malignant neoplasms, 1955-1965*, 2 vols., Geneva; *World Health Statistics Report*, 23, No. 10, 862-999.

workers and others concerned with health problems. Data are presented by sex, age and site, and the sites are classified according to the International Classification of Diseases.

Statistics on other subjects of current interest and public health importance, including the main infectious diseases, late fetal deaths, and infant and childhood mortality, were compiled, processed and disseminated. Such statistics help in the definition of health problems and the assessment of their magnitude, and also in epidemiological studies aimed at identifying the factors responsible for differences.

An analysis was undertaken of the information received in reply to questionnaires sent to Member States in 1969 regarding the availability of hospital morbidity statistics.

A consultation was held in Geneva in September to consider the role of health statistics in studies of human reproduction and in family planning programmes. On the basis of experience in various countries, recommendations were made for research in particular areas, and for a programme of activities, with emphasis on field studies, to help countries in collecting, processing and analysing data and assessing their reliability. It was also recommended that curricula for training health statisticians at the professional level, and for teaching statistics to medical undergraduates, should be reviewed, especially in developing countries, to ensure that they include methods applicable to family planning programmes.

The part that WHO might play in co-ordinating the various reporting systems set up in different countries to collect information on the incidence of congenital malformations was considered at another consultation, held in November.

In accordance with resolution 1486 (XLVIII) of the Economic and Social Council, WHO began, in co-operation with the United Nations, a study of fetal, infant and childhood mortality. The study covers present levels and recent trends in mortality, by cause of death, and takes into consideration sex differentials, the influence of gestational age and weight at birth on survival, and other factors influencing mortality at this period of life. WHO's part in this study consists in the analysis of statistical information made available by various countries for the period 1958-1967.

Volume III of the 1966 *World Health Statistics Annual*,¹ published during the year, contains statistics on health personnel and hospital establishments,

showing the number of persons working in the various health occupations and the ratios of physicians, dentists, pharmacists, medical assistants and nursing personnel to the populations of the various countries.

Statistical analysis, which has always formed an essential part of many of the Organization's activities, played a particularly important role in more than 30 WHO-assisted studies during 1970. Examples are the trials of BCG vaccination against leprosy in Burma and of Japanese encephalitis vaccine in the Republic of Korea, and epidemiological studies of trachoma in six countries and of schizophrenia in nine. In addition, mathematical models were developed for certain specific diseases, including typhoid, cholera, tetanus and leprosy, with a view to facilitating epidemiological forecasts.

Emphasis was laid on statistical aspects during a workshop on operational research in screening for cervical cancer that was organized with WHO's co-operation in Geneva by the National Institute of Health and Medical Research (Paris).

International Classification of Diseases

In order to secure the necessary background information for the Ninth Revision of the International Classification of Diseases, a questionnaire was sent to all Member States concerning the use made of the current Classification, and work was started on an analysis of the replies received.

To facilitate the work of the national committees being set up in a number of countries to consider the Ninth Revision, the Organization prepared a list, in order of code number, of all terms appearing in the alphabetical index of the Classification.

The progress made during the previous 12 months in preparations for the Ninth Revision was reviewed at a meeting of the heads of the four International Reference Centres for the Classification of Diseases, held in Moscow in September.

The multiple-condition coding and tabulation procedure drawn up at a consultation in 1969 was tested, with participants from 12 countries each coding the same material and the International Reference Centre for the Classification of Diseases in London tabulating the results. Analysis revealed the need for clarification of some of the rules for multiple-condition coding. As a number of countries are introducing multiple-condition coding techniques for mortality data, the Organization drafted an alternative form of medical certificate of cause of death, designed to facilitate analysis with the use of this procedure, and made arrangements for it to be tested in a small-scale

¹ World Health Organization (1970) *World health statistics annual, 1966, Vol. III: Health personnel and hospital establishments*, Geneva.

trial on hospital deaths in several countries. In order to help the many countries that lack not only the technical resources required for multiple-condition analysis, but even the medical staff necessary for complete certification of morbidity and mortality, WHO prepared a draft classification suitable for recording statements made by non-medical persons concerning illness and cause of death.

A further draft of the compendium of recommendations, definitions and standards relating to health statistics was prepared in the light of comments made by a study group that met in 1969. The proposed international classification of surgical procedures was circulated to all Member States for comment, together with copies of two national surgical classifications in current use, for the purpose of comparison. Comments were, in general, in favour of the international classification, and several suggested amendments were incorporated in the draft. Preliminary drafts were prepared of a complementary classification of radiological, laboratory and other procedures used in medicine.

The four international reference centres reviewed the Eighth Revision of the Classification in their respective languages with the aim of identifying any errors and inconsistencies, removing obsolete terms, proposing new terms for inclusion in the Ninth Revision, and studying the need for greater specificity for such purposes as diagnostic indexing.

Assistance to Governments in the Development of Health Statistical Services

The rapid increase in the use of computers in national health statistical services and corresponding developments in WHO's work in this field have complicated the problem of improving health statistics in the developing countries. For while some countries are using advanced automated systems for the processing of data, many lack the organization and personnel required to provide even basic health statistics. The greater part of WHO's effort is concentrated on helping countries that wish to improve their basic medical records and health statistical systems. To this end WHO provided advice and help in the training of personnel to 35 countries in 1970.

Many of the recommendations made by expert committees on health statistics and other technical groups during the past years have been adopted by Member States and have become established statistical practice. However, there are few countries—even among those with the most modern statistical services and equipment—where the statistics have actually been used and action has been taken on the basis of an evaluation of the information collected. In order to

develop a methodology for the evaluation of the health statistics available and the existing statistical system in any country, WHO sought the views of a number of experts, including members of national committees and staff working in field projects. In addition, a detailed review was made of WHO-assisted projects on health statistics in operation between 1960 and 1969.

The fact that statistics, although available in a country, are often not serving their real purpose is partly due to their inadequate interpretation and the lack of co-ordination between the statistician, health programmer and health administrator. An expert committee on health statistics met in Geneva in December to review the situation regarding the use of health statistics in national health planning and the evaluation of health services, and to develop additional statistical indicators for this purpose. Particular stress was laid on the training of health and statistical personnel in the use of health statistics for health planning.

The information collected by WHO through regular reports from countries on their health statistical situation has provided valuable material for evaluating world developments in health statistics and planning future activities in this field.

Radiation Health

Surveys undertaken by WHO in countries of the South-East Asia, Eastern Mediterranean and Western Pacific Regions have revealed a serious need for more and better-trained staff in medical radiology. Medical radiation physicists are almost non-existent in many countries, so that there is often no possibility of ensuring the necessary co-operation between radiotherapists and medical radiation physicists with regard to the operation of high-energy radiotherapy machines, the number of which is rapidly increasing.

To help overcome the shortage of trained staff, WHO provided assistance for the training of diagnostic and therapeutic radiographers in India, Nigeria and Thailand, medical radiation physicists in India, and electro-medical engineering technicians in India, Indonesia and Tunisia. In addition, a three-month inter-regional course was organized for the training of X-ray engineering technicians from countries of the African, South-East Asia, Eastern Mediterranean and Western Pacific Regions. Participants were familiarized with methods of maintaining and repairing equipment in factories in the Federal Republic of Germany, the Netherlands and the United Kingdom.

The Organization continued to assist in the setting-up and improvement of national radiation protection

services, both through direct assistance to and collaboration with national health authorities and through regional activities.

An example of the latter is the seminar on radiation protection, held in Kuwait in March, when senior officers responsible for radiation protection in countries of the Eastern Mediterranean Region discussed problems in the development of national programmes in radiation health, the establishment of radiation protection services, the training of personnel in radiology and the formulation of radiation protection legislation (see page 251).

The development of the use of radioisotopes also continued to receive attention, and a PAHO scientific group met in Washington, D.C., in March, to consider the development of a multinational research programme in nuclear medicine. It reviewed the progress in different aspects of research in nuclear medicine in Latin American countries, and made recommendations regarding the steps necessary for future development in this field—namely, the training of personnel at different levels, the exchange of information and experience, improvement of the supply of radioisotopes and equipment, and inter-country co-ordination.

Data on the use of radiation and radioisotopes in medicine in different countries were provided by WHO for reports to be submitted by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) to the United Nations General Assembly regarding population doses from occupational and medical irradiation.

Much of WHO's activity has been directed towards the improvement of equipment, since many X-ray installations in use are of unsatisfactory design and lack the most essential radiation protection measures. Thus a long-term field trial is being made, with the co-operation of UNICEF, to evaluate X-ray diagnostic equipment specially designed for general-purpose use in health centres and small hospitals under tropical and other difficult environmental conditions. During 1970 a WHO team inspected the general-purpose X-ray units which had been provided in Greece, Kenya, Tunisia, Turkey and Yugoslavia, and made specific recommendations for improving the design, installation, maintenance and use of the equipment.

The importance of maintaining high international standards in X-ray equipment and premises, and problems of staffing, were discussed at an inter-regional seminar on the use of medical radiological apparatus and facilities, held in Singapore in November. Public health officers, hospital physicians, radiologists, medical radiation physicists, engineers and tutor radiographers from countries of the South-East Asia and Western Pacific Regions considered the essential tasks

and needs of their relevant specialties under different conditions and for different purposes, and drafted detailed conclusions and recommendations for the improvement and application of diagnostic radiology at four levels of medical care ranging from health stations to central hospitals (see page 271).

With regard to staff safety and protection, WHO continued to provide advice for the setting-up of film badge services for the monitoring of personnel particularly exposed to radiation by reason of their occupation. The mailing service for personal dosimetry with film badges in the Eastern Mediterranean Region was continued, and the valuable experience gained will serve as a basis for the extension of the service to countries of other Regions.

In addition, the Organization co-operated with the International Commission on Radiological Protection and the International Commission on Radiation Units and Measurements in the preparation of reports related to problems of radiation protection and radiation medicine. It also collaborated with IAEA in the revision of a manual on the safe handling of radioisotopes, the preparation of manuals on radiation haematology and dosimetry in radiotherapy,¹ and the drafting of outlines for an atlas of typical treatment plans in radiotherapy with cobalt-60. A set of manuals for practical guidance in radiation protection in hospitals and general medicine is being drafted by IAEA, ILO and WHO.

Accurate clinical dosimetry is a prerequisite for the successful and safe use of radiotherapy. In this connexion pilot studies on the calibration of clinically-used radiation dosimeters were continued at the two WHO Regional Reference Centres for Secondary Standards in Radiation Dosimetry, in Bucharest and Buenos Aires, with a view to providing regular calibrations and checks of radiation dosimeters from neighbouring countries. The third such Regional Reference Centre was established during 1970—at the Radiotherapy Department of the Outram Road General Hospital, Singapore. The comprehensive calibrations and checks of commercially available radiation dosimeters being made in the Federal Republic of Germany with WHO assistance will make it possible to prepare detailed recommendations for the use of different types of dosimeters.

A joint IAEA/WHO project was started in 1970 to compare the radiation doses used in different countries in radiotherapy with cobalt-60 units. The comparison is made with a special type of dosimeter that can easily be mailed from hospitals, and the radiation dose

¹International Atomic Energy Agency (1970) *Manual of dosimetry in radiotherapy*, Vienna (Technical Report Series No. 110).

is evaluated by IAEA in order to assess the extent to which the doses applied to patients are consistent with those prescribed in the treatment plan. The results obtained make it possible to provide advice on means of improving the dosimetric method applied in any institute where it is found to be unsatisfactory.

The large increase in the number and type of radiation sources has resulted in a pressing need to develop internationally agreed standards for radiation dosimetry. The role of standardizing laboratories, secondary standard instruments and techniques, as well as staff requirements in this connexion, were considered by the Joint IAEA/WHO Panel on the Absolute Determination of Radiation Dose and Absorbed Dose Standards, at its meeting in Roskilde, Denmark, in May. Several recommendations were made by the Panel—in particular, that IAEA and WHO should strengthen activities with regard to the training of medical physicists.

One of the objectives of WHO's activity in applied radiobiology has been the evaluation of biological indicators of radiation damage. The Joint IAEA/WHO Scientific Meeting on Biochemical Indicators of Radiation Injury in Man, held in Paris in June, considered, in particular, the suitability of biochemical tests for detecting the effects of relatively low doses of radiation in man. It discussed means of evaluating post-irradiation biochemical changes in man and animals, and proposed suitable tests that might be used in combination with other clinical methods for assessing radiation exposure of man. Three groups of biochemical indicators were proposed as potential diagnostic tests in clinical practice—namely, the evaluation of amino acids, enzymes, and degradation products of nucleic acids. However, these tests are still not sensitive enough for the detection of low-level exposures—for which the evaluation of chromosome aberrations was considered to be the most promising method.

In this connexion, a WHO-sponsored programme of co-ordinated research on the use of chromosome

aberrations as a biological indicator of radiation damage in man was started, with the collaboration of 22 laboratories in 15 countries. The results of the research are expected to be useful not only for the diagnosis of radiation effects on man but also for the evaluation of other environmental and occupational parameters that might influence human health.

WHO-assisted basic research on changes of biochemical and other molecular structures was continued, with the aim of evaluating possible adverse effects of radiation-sterilized drugs and radiation-preserved foodstuffs.

In the programme set up by WHO to help UNSCEAR to estimate the global risk of radioactive contamination, the strontium-90 content in samples of human bones from Africa and Latin America was measured and the results were submitted to UNSCEAR. The programme has been extended to obtain data from countries in the South-East Asia Region and samples have been collected in Burma, India, Indonesia, Nepal and Thailand. To assess the degree of accuracy and the comparability of data obtained on the strontium-90 content in bone in the Federal Republic of Germany, India, the Union of Soviet Socialist Republics and the United States of America a comparison is being made of the results obtained with different procedures and methods of measurement.

Further details of the Organization's work in the field of environmental radioactivity are given on page 55.

Much of WHO's work with regard to radiation health is developed and implemented in collaboration with IAEA. In addition to the joint activities mentioned above, WHO participated in the following IAEA meetings: a symposium on dynamic studies with radioisotopes in clinical medicine, a meeting on radioactive labelled compounds for use in medicine and biology (as well as other research and industry), and a panel meeting on inhalation risks from radioactive contaminants.

CHAPTER 6

FAMILY HEALTH

An important change was made during the year in the Organization's programme in respect of maternal and child health, human reproduction and human genetics in order to focus upon the basic social unit—the family (taken as including the father, the mother and their children). The problems of human reproduction, growth and development and the health requirements of the family unit as a whole need to be considered together, not only the individual requirements of its several members. The Organization has accordingly embarked upon a programme of “family health”, in order to be able to deal with needs that were hitherto either not met or met only partially. In many of the developing countries, the youth and the women of child-bearing age make up some 70 per cent. of the population; by both their numerical and their social importance, they constitute a group that demands priority attention.

A programme that takes due account of the health needs of the family necessarily involves close collaboration between a number of interdependent health services. It will be apparent from the following sections of this chapter that for family health care, including family planning, to achieve the optimum coverage and quality there must be joint planning and participation on the part not only of the services described below but also of those concerned with health education, training, nutrition and other activities.

This integrated approach should at the same time raise the standards of the health service infrastructure and bring about a change of outlook in the family, in the community, and among members of the health and allied professions—gradually eroding the negative view that health is merely the absence of disease or infirmity and fortifying the more positive attitude enunciated in the Constitution of WHO.

The wider focus sought by WHO also provides added opportunities for co-ordination with the United Nations, UNICEF and other organizations within the United Nations system as well as with non-governmental, bilateral aid and other organizations concerned with family or community welfare.

Maternal and Child Health

There was a considerable increase during the year in the number of requests from Member States for assistance in developing their national family planning activities as part of maternal and child care or other components of the health services. A very substantial contribution from the United Nations Fund for Population Activities made it possible to begin to meet these requests. Since a significant growth in the number and complexity of field activities is envisaged, it was necessary to increase the training of maternal and child health staff. Many of the training activities are mentioned in the following paragraphs, often in connexion with projects of which training is only one aspect; reference to training in maternal and child health aspects of family planning is also made on page 75.

The development of basic health services into which services for maternal and child care are integrated is a prerequisite for progress in the field of family planning, and the Organization attaches importance to a comprehensive approach involving services at the local, provincial and national levels. At a meeting organized with WHO assistance in June in New Delhi senior health officials from the central and state governments of India discussed maternal and child health and family planning services in urban Indian medical and health institutions. They concluded that the survival of children strongly affects motivation for limiting family size: in areas where child mortality is high, requests are received for reversal of sterilization procedures, and there are demands for removal of intrauterine devices where permanent local services are lacking to provide follow-up visits to women who have accepted the device. The meeting therefore urged the association of family planning services with those for maternal and child health, since they are both part of the same public health effort and greatly reinforce each other when properly integrated; to ensure child survival in the urban community, it suggested that regular paediatric consultation be provided at the local level.

As part of a project for strengthening the national health services in Indonesia, the Organization assisted in the administration and operation of the maternal and child health services, including those for family planning, at the local level. At present there are 100 public health centres in the country, each with 10-20 maternity beds and each serving a population of 30 000-40 000; by merging some of the 5000 maternal and child health clinics and 4000 polyclinics, more public health centres were created during the year at which integrated services for maternal and child health and for family planning are provided. In a continuation of the WHO-assisted training programmes to upgrade health centre staff in Indonesia, some 300 medical officers, 800 nurses and midwives, 400 sanitary workers, and 4000 family planning workers received training during the year; methods of instruction were improved and new teaching equipment was provided by UNICEF.

During 1970, there was increased co-ordination and collaboration with the United Nations, UNICEF, and specialized agencies as well as with non-governmental and other organizations concerned with family planning and related subjects. For example, a meeting convened by WHO in July brought together representatives of the United States Agency for International Development, UNICEF, the United Nations Development Programme, the International Institute for the Study of Human Reproduction, the Population Council, the University of the Philippines, and the University of Novi Sad (Yugoslavia). This meeting reviewed experience gained in current family planning programmes and formulated guidelines for a project initiated later in the year on the development of the family planning aspects of maternal and child health activities, with particular reference to the "post-partum" or "maternity-centred" approach. It has been found that soon after pregnancy, childbirth or abortion, women are highly motivated to avoid subsequent conception, and a family planning programme that devotes special attention to reaching these women through the maternity services attains a highly significant group. This approach will be focused upon in the project, which receives financial support from the United Nations Fund for Population Activities and one of the aims of which is to upgrade and extend the provision of maternity care so that family planning and other related activities become mutually supporting. The initial phases of the project have started in Iraq, Jamaica and Tunisia. In Tunisia, for instance, the maternity-centred approach is being implemented, in collaboration with the International

Planned Parenthood Federation, by the establishment of a regional family planning pilot centre which will train French-speaking professional and auxiliary personnel from Tunisia and neighbouring countries.

Plans for an expanded programme of work in family planning as part of the national health services and integrated with maternal and child care were implemented in 1970 or drawn up for initiation in 1971 in consultation with 40 governments, by WHO or through joint UN/WHO planning missions. Such missions were, for example, prepared or carried out in respect of Ceylon, Haiti, Indonesia, Iran, Mauritius, Pakistan, Thailand and Tunisia. Among the other countries in all Regions where WHO is contributing to strengthening the family planning component of maternal and child care mention may be made of China (Taiwan), Colombia, and the United Arab Republic.

A seminar was convened in New Delhi in February to assess the status of comprehensive health care for mothers and children in the South-East Asia Region in the light of the experience gained in implementing recommendations made during the technical discussions, at the twentieth session of the Regional Committee in 1967, on the integration of maternal and child health services into the general health services. The seminar laid particular emphasis on the importance of taking reproduction, growth and development jointly into consideration when organizing maternal and child health services, so as to take full advantage of the opportunities those services provide for meeting such priority needs as communicable disease control, education on health and nutritional matters, and family planning.

At the field level, maternal and child health projects were combined with basic health services programmes for the first time in many African countries, including Burundi, Chad, the Democratic Republic of the Congo, Dahomey, Gabon, Rwanda and Sierra Leone. In Gabon, for example, this entailed close co-ordination with environmental health activities, combined health and nutrition education for the public, the improvement of the infrastructure of maternal and child health services through the establishment of new maternity centres, the inclusion in the work of the basic health units of such maternal and child health activities as immunization and the distribution of dietary supplements for mothers and children, and the training in maternal and child health of midwives, nurses, auxiliary personnel, teachers and home economists.

In all the country projects it is assisting, WHO continues to emphasize the importance of training health workers and educating the public in maternal and child care. For instance, in the project in the Ivory Coast, which is also assisted by UNICEF, nurses are being trained in the preventive aspects of maternal and child care and well-baby clinics are being established in a number of social welfare centres in Abidjan; home visiting and immunization are being included in the task descriptions of the nursing personnel (see also page 125).

In-service training courses were held during the year to improve the quality of care offered in maternal and child health centres. In the Eastern Mediterranean Region, governments have made efforts to better the maternal and child health services by recruiting girls with higher educational background for the courses for community nurse-midwives and by improving their training; the training programmes place special emphasis on health education and child nutrition, especially on weaning foods and weaning problems of the young child.

At the inter-regional level, WHO continued to co-operate with UNICEF in the organization of a number of training courses. The two organizations, for instance, were associated in sponsoring the seventh training course for senior teachers of paediatrics from developing countries. Those attending this course, which is based on the Institute of Child Health, London, and involves five months' training in the United Kingdom and four months in Uganda and India, were from the Regions of the Americas, South-East Asia, the Eastern Mediterranean and the Western Pacific. A survey was made during the year among participants in the previous courses from the South-East Asia Region to assess the extent to which the courses had led to improvements of paediatric teaching in the medical colleges concerned.

The fourth in a series of advanced courses in paediatrics was also organized in September by the National Institute of Mother and Child, Warsaw, in collaboration with WHO and UNICEF, to provide advanced training for medical officers holding positions of responsibility in maternal and child health programmes in developing countries; the participants were drawn from the African, South-East Asia and Eastern Mediterranean Regions. In Kuala Lumpur, the Organization convened an inter-regional seminar, attended by participants from all WHO Regions except the Americas, on the role of the midwife in maternal and child care. WHO also participated in the preparation of, and selection of participants for, a course offered by the Hacettepe Medical Centre, Ankara University, for medical officers in charge of

paediatric hospital services, primarily in the Eastern Mediterranean Region.

The Organization was represented at two meetings of the Technical Advisory Committee of the International Children's Centre, Paris, during the year. It also participated in February in a meeting organized by the Centre in Switzerland on longitudinal research on the growth and development of normal children and in the Centre's seminar on "The Child in the City", held in November in Paris.

In July the Organization was represented at the Administrative Committee on Co-ordination's Sixth Inter-Agency Meeting on Youth, for which a full statement was prepared of WHO's activities relating to youth, with particular reference to maternal and child health. In December, a paper was presented at the Third Annual Population Conference, convened in Paris by the Organization for Economic Co-operation and Development, outlining WHO's programme for the provision of assistance in the fields of family planning, human reproduction and population dynamics.

Human Reproduction

The recognition by an increasing number of Member States of the urgency of problems concerning human reproduction, family planning and population dynamics and the consequent increase in national requests for assistance were reflected in the growth of the Organization's programme in these fields in 1970. This development would not have been possible without the additional financial resources made available by the United Nations Fund for Population Activities and the Swedish International Development Authority.

The main emphasis was laid, as in previous years, on advisory services given to Member States for the planning, implementation and evaluation of family planning services within health activities, on developing education and training programmes and facilities, and on stimulating research into the physiological, public health and clinical aspects of human reproduction. A consultation in April was devoted to elaborating a methodology for the evaluation of family planning programmes as a first step towards testing evaluation methods in the field.

An expert committee met in November to prepare guidelines for family planning within health services. It reviewed strategies for family planning activities and their implications for the health and other sectors. The implementation of family planning programmes at the central, intermediate and local levels was discussed and the experience of various countries in

integrating these programmes with other health activities was analysed. Methods of evaluating various approaches to family planning through health and allied services were also considered.

Many of these topics had been discussed by senior public health administrators, clinicians and heads of medical schools from 10 countries of the European and Eastern Mediterranean Regions at an inter-regional symposium on the health aspects of human reproduction, family planning and population dynamics that was held, in response to a request from the Government of Iran, in Teheran in October. The symposium also dealt with relevant demographic and socio-economic trends, the current status of fertility regulation, and the education of medical and other health personnel.

Seminars on recent advances in the physiological, clinical and public health aspects of human reproduction were organized in Bangalore, India, and in Bangkok for public health administrators, members of medical faculties, medical students and research workers, and nurses and midwives from the host countries. Malaysian participants also attended the seminar in Bangkok. New developments in research, clinical practice and public health relating to human reproduction and family planning were presented by medical faculty members and participants. A similar seminar was held in Baghdad for participants from Iraq.

Other forms of assistance to countries included the convening in Indonesia of a workshop on co-ordination of national and international resources supporting the national family planning programme, and technical assistance to China (Taiwan) on the integration of family planning into maternal and child health services.

There was a shift in emphasis in 1970 in the Organization's programme for education and training in the subjects of human reproduction, family planning and population dynamics. In 1969 stress had been laid on the training of WHO staff in these subjects. Similar training was also given in 1970, with the holding of a one-month course for WHO headquarters and regional staff, involving field trips to India, the Republic of Korea and the United Arab Republic, and the organization of the first training course for WHO field staff in the Western Pacific Region; the latter was also attended by UNESCO and UNICEF field staff. However, as the WHO infrastructure required for a rapidly expanding programme became firmly established, it was possible to give increased attention in 1970 to other aspects of training, particularly the training of national personnel.

The first Western Pacific regional course on the health aspects of population dynamics, held in Manila in November, was attended by national health staff and social workers from 15 countries and territories in the Region.

A two-month course for obstetricians and gynaecologists in teaching posts was held with WHO support at the Central Family Planning Institute, New Delhi. It provided a comprehensive review of recent developments in the physiological, clinical and public health aspects of human reproduction, including family planning. The demographic and social aspects were covered, as well as the training of and the role to be played by all types of personnel involved in family planning activities.

A study group that met in Geneva in December 1970 reviewed the development of health education in family planning activities within health programmes and defined objectives and priorities in this field.

A guide was prepared to facilitate the assessment of training facilities and to improve training, particularly in relation to health education, in the different WHO Regions.

The Organization's research activities during the year embraced a wide range of subjects. An overall view of the current activities of agencies supporting research in reproduction, including fertility control, was provided at a meeting convened in June and attended by representatives of national medical research councils, bilateral aid agencies, private foundations and the International Bank for Reconstruction and Development. The current activities and future plans of these bodies were discussed as well as the means of strengthening inter-agency co-ordination and the role that might be played in this respect by WHO. The meeting stressed the urgent need to explore means of expanding the research and training potential of existing institutions. This study, which was begun by WHO in September, was financed by a contribution from the Swedish International Development Authority to the Voluntary Fund for Health Promotion.

Late in the year the Organization designated the Reproductive Endocrinology Research Unit, Karolinska Institute, Stockholm, as a WHO Research and Training Centre on Human Reproduction. Among the functions of this new centre will be the conduct of research into those reproductive processes that may be subjected to regulation by pharmacological agents and the training of potential investigators in this field.

Another new aspect of the research programme relates to clinical trials of fertility-regulating agents. These trials are a necessary stage in the much-needed

development of new, cheap, safe and effective contraceptive methods, but they present a number of theoretical and practical problems. An inter-regional course on the methodology and design of such trials was held in New Delhi. It consisted of lectures, discussions, practical work and statistical exercises and was attended by participants from 13 countries in the South-East Asia, Eastern Mediterranean and Western Pacific Regions.

Two consultations were held in September: one to plan the establishment of a field team to carry out clinical trials with fertility-regulating agents in close collaboration with a national institute, and another (see page 68) to consider the role of health statistics in studies of human reproduction and in family planning programmes.

Reference is made on page 46 to the Stockholm workshop concerning the possible relationship between neoplasia and hormonal steroids used in fertility control.

Two scientific groups met in 1970. In September, the WHO Scientific Group on the Endocrine Regulation of Human Gestation reviewed the present state of knowledge in this field and considered some of the difficulties impeding further progress. Among these is the need for methods that would make it possible to study low but possibly highly significant blood levels of hormones at different stages of gestation.

In December, the WHO Scientific Group on Advances in Research on, and Clinical Experience with, Methods of Fertility Regulation considered new developments, particularly in the use of hormonal steroids and intrauterine devices, from the point of view of their safety and their effectiveness in different circumstances. This review gave a comprehensive picture of the areas in which research was most urgently needed.

The WHO Scientific Group on the Health Aspects of Family Planning that met in 1969¹ stressed how little was known about the effect of family size and rate of family building on family health. To obtain further data, a collaborative epidemiological study was set up in 1970 with centres in India, Iran, Lebanon and Turkey. Each centre will test a number of hypotheses relating to these questions in two population groups differing culturally or economically but living in the same area, and at the same time investigate the effect of childhood mortality on attitudes to family planning. The standardized research protocol was finalized at a meeting of the investigators concerned, held in Gandhigram, India, in September. Since that meeting, centres in China (Taiwan), Pakistan and the Philippines have joined the collaborative study.

Other epidemiological studies, concerned with

obtaining baseline data on reproductive health and disease, reproductive practices and the impact of health services and of family planning care, received WHO support in India, Nigeria and Peru. In one of the investigations in rural India, detailed cross-sectional and prospective studies of reproduction are being made; these include, in particular, the compilation of pregnancy histories and of related social, cultural, economic and vital statistics information. Baseline data have been obtained on maternal and child health as well as on beliefs about and attitudes to child survival. These data are at present being correlated with measurements of the impact of general health programmes on maternal and child health, including the practice of family planning. Factors affecting the use of different types of fertility control methods by women living in rural areas will also be evaluated.

Several WHO-assisted activities have been concerned with the physiology of reproduction. Support was provided, for instance, for studies designed to clarify the cellular, immunological and metabolic relations between the mother, preimplantation embryo and fetus; apart from their interest in relation to the study of fundamental reproductive processes, they should improve understanding of problems of sterility and malformations and also have potential application in fertility control. Other work in this field that received a subvention from WHO during the year was a study to determine the immunoglobulin content of normal cervicovaginal secretions; details of this are given on page 86.

A further example of service to research in reproduction physiology was WHO's collaboration in organizing the second Karolinska Symposium on Research Methods in Reproductive Endocrinology; this was held in Geneva in March and dealt with steroid assay by protein binding.

The additional resources made available to the Organization by the United Nations Fund for Population Activities and the Swedish International Development Authority permitted a considerable increase in the number of research training grants awarded. For instance, they enabled the Organization to send 20 trainees from all WHO Regions to the graduate teaching course on advances in reproductive physiology given at Cambridge University in August and September, for which the Organization also provided financial assistance.

Many facets of WHO's work on the subject of human reproduction involve close co-operation with other agencies or organizations. Educational projects on human reproduction relating to schools or youth programmes, for instance, have aspects of joint

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 442.

concern to UNESCO, with which arrangements for closer co-operation were made during the year, and to WHO. The Organization also participated in the UNESCO regional workshop in Bangkok on population and family education. To facilitate inter-agency co-ordination, consultations were held during the year between organizations within the United Nations system to establish agreed definitions of a number of the elements that enter into family planning programmes. WHO also contributed to the work of the Sub-Committee on Population of the Administrative Committee on Co-ordination and to that of the United Nations Fund for Population Activities. In addition, it was represented at a meeting on social development and planned parenthood organized in the United Kingdom by the International Planned Parenthood Federation and Keele University, and presented papers at the "Population 70" meeting of that Federation and at the XVth Nobel Symposium on the Control of Human Fertility.

Human Genetics

The inherited haemoglobinopathies and allied disorders, chromosome aberrations and the most serious inborn metabolic disorders head the list of diseases of genetic origin of major public health concern that the Organization is concentrating upon in order to investigate their etiology and to develop the best methods for their prevention and treatment.

The frequency of an abnormal fetal haemoglobin, F_{Malta} , has been ascertained to be about 1.5 per cent. in newborn Maltese children. The Organization gave support for a study being carried out in institutes in Malta and the United Kingdom and aimed at the detection of individuals who might be doubly heterozygous for the F_{Malta} variant and for β -thalassaemia, in order to show whether the two genes are linked on the same chromosome and inherited together.

It has long been postulated that heterozygous people with haemoglobin S are at an advantage in a malarious environment, and that falciparum malaria is the selective agent that maintains a high frequency of this abnormal haemoglobin in central African populations. At the WHO Regional Reference Centre for Glucose-6-Phosphate Dehydrogenase in Ibadan, Nigeria, it was shown that increased sickling of parasitized erythrocytes may be the mechanism of resistance against malaria in heterozygotes having both A and S haemoglobin. Blood samples were drawn from heterozygous children with acute falciparum malaria, and it was found that the rate of sickling of parasitized cells was two to eight times greater than that of non-parasitized cells within the same blood sample. The parasitization of an AS

erythrocyte substantially increases the probability that it will sickle, and parasitized cells, once sickled, will be removed more efficiently from the circulation by phagocytosis. This might be the main mechanism by which an advantage against falciparum malaria is conferred on AS heterozygotes.

Results obtained during the year in the continuing study of the frequency of abnormal haemoglobins in migrant populations have shown that the prevalence of carriers of haemoglobin S among migrant men is slightly higher than in the populations from which they come; the population samples analysed were drawn from migrants from Mali, Mauritania and Senegal. If carrying the gene for haemoglobin S does indeed confer an advantage against malaria, this finding among migrants raises the possibility that haemoglobin S may have been spread in central Africa partly by migrants, for they may be expected to include many of the healthier adult males.

A field study in Nigeria of the relationship between G6PD and malaria also received support from the Organization. It had previously been postulated that girls heterozygous for G6PD show an increased resistance to malaria. In the field study, three groups are being investigated—namely, children with acute malaria, children with febrile illness other than malaria, and normal adults. Comparisons of the parasite rates and G6PD genotype in these groups may show whether this genotype does in fact have a protective effect against the disease.

It is known that among Peruvians in the Andes the oxygen dissociation curve is shifted to the right as compared with Europeans in the same environment, suggesting that Peruvians living at high altitudes may release oxygen from haemoglobin faster than Europeans. This effect does not seem to depend upon peculiarities of the haemoglobin molecule of the Peruvians but may represent a genetic adaptation to low oxygen pressure. If so, it would be one of the few examples of an evolutive adaptation to a known selective factor. The Organization therefore provided assistance for a study starting in 1970 to determine whether the same rightward shift of the oxygen dissociation curve is observed in Nepal and whether a common pattern of genetic peculiarities can be identified in populations living at high altitudes.

A prospective study of chromosome aberrations, with particular reference to Down's syndrome, was initiated in 1970, with WHO support, in India, among whose population this developmental disorder seems to have a very low incidence. Several hypotheses might account for this apparently low frequency, ranging from diagnostic difficulties to a lower viability of affected fetuses. There may, however, be a true genetic explanation, and this is being investigated.

Studies supported by WHO in the Union of Soviet Socialist Republics have shown that some antibiotics, such as mitomycin and puromycin, may induce chromosome aberrations both in cells cultured *in vitro* and in patients under treatment. The effect *in vivo*, however, seems to be transitory, and after discontinuation of treatment the number of aberrations counted in peripheral leucocytes falls rapidly to a normal level.

At the WHO International Reference Centre for the Processing of Human Genetics Data, in Honolulu, training was given in the most efficient techniques for the analysis of human genetics data for research workers from Brazil, Italy, Japan, the Netherlands

and the United Kingdom. The formal and population genetics of congenital malformations of the limbs and of early mortality were investigated at this centre. Other work included studies of the segregation patterns of histocompatibility genes in man, and the analysis of isozymes from Micronesian populations whose genetic structure is under study.

A WHO Scientific Group on Methodology for Family Studies of Genetic Factors met in September to advise on the most efficient methods for the identification and characterization of major genetic entities in inherited disease.

CHAPTER 7

HEALTH PROTECTION AND PROMOTION

Nutrition

There is a growing awareness at high political levels of the seriousness of the nutrition problem. This awareness was apparent at the forty-ninth session of the Economic and Social Council, in July, which recommended that the report and note by the Secretary-General of the United Nations on the increase in production and use of edible protein be transmitted to the General Assembly and that the attention of the General Assembly be called to the need for intensified efforts in this field by the United Nations and the specialized agencies.

The FAO/UNICEF/WHO Protein Advisory Group has further expanded its activities. At its seventeenth meeting, held in New York in May, it discussed the role of systems analysis in the formulation and evaluation of nutrition intervention programmes and reviewed developments in plant breeding aimed at increasing the total yield of crops and improving their quality. With regard to the use of leaf protein concentrates in human diet, the Group considered that too little is known about the economic prospects of these concentrates to warrant giving high priority to development work on them. While it encouraged the continuation of investigations, it advised the governments of developing countries against incurring any major expense on such work until thorough feasibility studies have been carried out.

Ad hoc working groups created by the Protein Advisory Group met in 1970 to review specific aspects of the "protein gap". The *ad hoc* working group on single-cell proteins, which met in Marseilles in April, reviewed new developments on the production of single-cell proteins derived from certain species of yeast, algae and bacteria, and suggested guidelines for the manufacture of these products. The *ad hoc* working group on feeding the pre-school child, at its meeting in Geneva in September, reviewed the nutritional requirements of infants and young children, prenatal nutrition, the use of protein-rich foods for the prevention of protein-calorie malnutrition, and problems related to infant feeding both in normal and in special circumstances. The group stressed the great impor-

tance of breast-feeding and the need to alert health authorities to the dangers of early weaning.

At the WHO centres for testing protein-rich food mixtures in Chile, China (Taiwan), Ethiopia, Guatemala and India, six new protein-rich weaning foods were tested for acceptability and tolerance and five for nutritive value. All the mixtures proved to be highly satisfactory, and in some countries plans have been made to proceed to marketing tests prior to commercial production. In March the investigators engaged in this programme and representatives of the international organizations concerned met in Geneva. They reviewed the results available and recommended some modifications in the methods of testing that would improve the comparability of results. They also emphasized the importance of formulating new types of food mixture for infants deprived of breast-feeding soon after birth and for use in emergency situations.

A seminar on protein problems associated with weaning foods, organized by the Algerian Government, was held in Algiers in October; WHO provided fellowships enabling participants from four neighbouring North African countries to attend. The experience gained in the development and marketing of Superamine, a locally produced weaning food, was the main topic of interest. Free distribution was believed to be necessary in some areas, depending on socioeconomic conditions.

The eighth Joint FAO/WHO Expert Committee on Nutrition met in Geneva in November. The subjects discussed were food enrichment and protein-calorie malnutrition. The Committee recommended that food fortification should be considered a worthwhile preventive measure against malnutrition but suggested that each country should examine the feasibility of applying it in the light of local conditions and available resources. The main point to emerge from the Committee's detailed discussion of protein-calorie malnutrition was that simultaneous efforts should be made to control communicable diseases in infants and children and to improve their state of nutrition through better diets and the supply of protein-rich foods, and also by giving nutrition education to the mothers.

Assistance has been given by WHO to research projects in Delhi and Vellore, India, on the prevention of iron-deficiency anaemia during pregnancy, and to epidemiological studies in Thailand on the effect of iron-fortification of fish sauce. Studies of dietary iron absorption in Caracas and in Seattle, Wash., USA, are being assisted. A joint IAEA/WHO consultation on the prevention of iron deficiency was held in Vienna in August. It suggested that further investigations should be made on the methodology of studies on the absorption of iron from mixed diets, using isotope techniques, and that epidemiological studies on the effectiveness of iron-fortified foods should be carried out on various types of food and under different conditions.

In Burma, Malaysia, Nepal, the Philippines and Thailand assistance was provided in the organization of programmes for the prevention of endemic goitre. A paper on research on endemic goitre in Latin America was published in a special issue of the *WHO Chronicle* devoted to nutrition.¹

Anthropometric surveys in Singapore and Yugoslavia were carried out with assistance from WHO according to the methodology recommended by it in 1969 for appraising trends of the nutritional status of populations through selected anthropometric indicators.

Nutrition programmes in many developing countries are still hindered by a shortage of nutritionists and by inadequate facilities for training them. To alleviate this problem, WHO (usually in association with FAO and UNICEF) has helped governments to further their training activities and has given assistance to regional courses organized by the Institute of Nutrition of Central America and Panama in Guatemala, the National Institute of Nutrition in Hyderabad, India, the Caribbean Food and Nutrition Institute in Jamaica, and the University of Ibadan in Nigeria. In addition, the first in a series of courses was organized in Beirut, for senior government personnel of countries of the Eastern Mediterranean Region (see page 159). Training activities are also part of WHO-assisted nutrition programmes in Algeria, Brazil, Cambodia (see page 170), Senegal, the United Republic of Tanzania, Venezuela (see page 137) and in the South Pacific islands.

Public health nutritionist-dietitians have been employed for more than a decade in several countries to help medical nutritionists in implementing nutrition programmes and, particularly, in developing nutrition education in the community. This category of personnel is still lacking in many countries, and the possibility of creating in the African Region a school of public health nutritionist-dietitians was investigated.

In co-operation with FAO and UNICEF, WHO continued to assist with co-ordinated applied nutrition programmes.

The Second World Food Congress organized by FAO was held in The Hague in June. For this occasion, as for the first congress, WHO contributed to the Freedom from Hunger Campaign by publishing a basic study, *Conquest of Deficiency Diseases*,² which traces the history of the fight against various deficiency diseases and examines the reasons why some have declined while others still persist. This publication forms part of a series of basic studies to which various agencies in the United Nations system contribute specialized works on agricultural, economic, social, and educational subjects relating to the Freedom from Hunger Campaign.

Dental Health

In the promotion of dental health the most promising developments today are concentrated on the prevention of dental caries and on the "delivery" of dental health services—i.e., on ensuring that such services reach effectively the people for whom they are intended.

Following the adoption of resolution WHA22.30 by the Twenty-second World Health Assembly, recommending Member States to introduce the fluoridation of community water supplies in suitable cases, the Organization is now endorsing water fluoridation as the most effective means of preventing dental caries.

The practice of water fluoridation has been associated with much controversy but its effectiveness and safety have been demonstrated in careful epidemiological studies over the last 20 years. To provide information on this question, particularly to public health authorities that are contemplating the adoption of fluoridation measures, a monograph was published providing a broad review of the scientific literature on the varied aspects of fluorides in human physiology and the many complex questions relating to the metabolism of fluorides and their utilization in medicine and public health.³ The monograph contains contributions from 29 authors from 11 countries, and comments of nearly a hundred specialists were taken into account in the preparation of the final version.

Assistance to governments on fluoridation programmes has included a study on the effectiveness of salt fluoridation in Colombia and courses in water

¹ *WHO Chronicle*, 1970, 24, No. 12.

² Aykroyd, W. R. (1970) *Conquest of deficiency diseases*, Geneva, World Health Organization (Freedom from Hunger Campaign Basic Study No. 24).

³ *Fluorides and human health*, by various authors (1970) Geneva (World Health Organization: Monograph Series, No. 59).

fluoridation in Brazil and Cuba. In the Western Pacific Region methods for the self-application of fluorides are being considered for use in areas where fluoridation of drinking-water is not feasible. However, fluoridation and other established methods of fluoride ingestion and application are only one approach to the comprehensive prevention of dental caries, and research is in progress on the control of dental plaque, control of the oral flora, and ways of increasing the resistance of the enamel, as well as on the environmental factors that affect these three aspects. WHO is supporting research on these subjects, including in particular the effect of trace elements on dental caries etiology.

The association of some environmental factors with the prevalence of dental caries is being studied in isolated population groups as part of the WHO-assisted research programme. An analysis of the data collected in the Territory of Papua and New Guinea on trace elements in food, soil and water for several population groups with widely differing prevalence of dental caries was prepared for publication.¹ Several relationships were defined between caries and certain elements, individually or in groups. Follow-up studies are proceeding. A WHO-assisted epidemiological survey on the effects of environmental factors on dental caries in schoolchildren in the Union of Soviet Socialist Republics has been undertaken by the Central Institute for Research on Stomatology in Moscow, which also prepared a Russian translation of the document "International Classification of Diseases—Application to Dentistry and Stomatology".

The delivery of dental health services is a developing activity which embraces dental care and preventive services and health education. As part of the Organization's research programme on public health practice, a study has been started on the pattern of existing delivery systems, and the information obtained is expected to provide a sound basis for assistance to countries in the planning and organization of dental health services.

Assistance in the organization and planning of dental health services was provided to Guyana and Mongolia, as well as to several countries and territories in the Western Pacific Region. In the Democratic Republic of the Congo advice was provided on the staffing of the dental health services within the health services as a whole; this is connected with the planning of co-ordinated training for all members of the health team. In the European Region a survey on child dental health was started as a follow-up of the pilot study

carried out in six countries in 1964; it will be broader in scope and cover most countries in the Region, and is designed to obtain information that can be used in the planning of dental services for children.

Many activities were devoted to the education and training of dentists and dental auxiliary personnel. Guidelines were prepared for use by dental schools in the Region of the Americas in the systematic revision of their curricula. A European regional conference on postgraduate dental education, held in London, reviewed postgraduate education systems, modern methods for training teaching and research personnel, and international co-operation in this field, with particular reference to the needs of European countries (see page 236).

The Organization provided assistance in the development of dental schools in Brazil, Ecuador, El Salvador, India, Panama and Venezuela, and continued to assist in dental education and training projects in Jamaica, Senegal, Sudan and Thailand. Advice on strengthening the teaching of preventive and social dentistry was given to dental schools in seven Latin American countries.

Assistance was given in the organization of training programmes for various types of dental auxiliaries in Ceylon, Indonesia, Iran, Israel and Somalia. A broad review of WHO-assisted activities for the development of training for dental auxiliaries was presented at an international symposium on dental hygiene, organized in Rome by the American Dental Hygienists' Association.

WHO continued to co-operate closely with the International Dental Federation and participated in the Federation's annual session, held in Bucharest, and in the meeting of its European regional commission.

Mental Health

During 1970 WHO provided various forms of assistance to 11 countries for the development of their mental health services, particular attention being given to planning at the national level. The assistance has reflected the increasing emphasis on community care and the integration of the mental health services into general health programmes.

Psychiatric services in the Union of Soviet Socialist Republics and their relationship with social welfare, educational and general health services were studied, during an inter-regional seminar in September, by psychiatrists and public health officers concerned with the organization of mental health services in developing

¹ *Bull. Wld Hlth Org.*, 1970, **43**, No. 6 (in press).

countries. The functioning of psychiatric services in Moscow, Vinnica, Leningrad and surrounding rural areas was studied (see page 269).

Increasing importance is being attached to the collection of data as a basis for planning. In a WHO-assisted project in the European Region, for example, a study is being made of the facilities and manpower resources available in different countries. It will supply basic information for a programme of operational research for the evaluation of different systems of care, so that the work of the national mental health services and the Organization's assistance might be directed to those areas where they can be most effective. Following the completion of the pilot phase of this project, which was carried out in eight countries, 10 more Member States were included in the study during 1970.

Means of evaluating preventive and treatment measures were considered at a consultation in Geneva in November, when specific suggestions were made for research to help in the future planning and improvement of services.

In all the WHO Regions, lack of trained personnel is still the main obstacle to the improvement of mental health services, and many of the Organization's activities have therefore been concerned with training. Examples are a conference on the training of personnel for psychiatric services, held in Izmir, Turkey, for countries of the European Region (see pages 149 and 236), a seminar on the teaching of psychiatry, held in New Delhi for countries of the South-East Asia Region (see page 141), a seminar on the place of psychiatry in medical education, held in Alexandria, United Arab Republic, for countries of the Eastern Mediterranean Region (see page 162), and courses in community psychiatry for general practitioners in countries of the Region of the Americas (see page 133). Burma, Ceylon, Japan, Malta, New Zealand, Nigeria, Thailand and Venezuela are among countries that received assistance from WHO in 1970 for undergraduate and postgraduate training in psychiatry, or training in mental health for general and psychiatric nurses.

As a means of promoting the development of mental health services within the public health structure, particular emphasis was laid on the importance of training public health personnel in the mental health aspects of their work, and a study was started on the teaching of mental health in schools of public health. The information that is being collected includes details of teaching curricula and methods, and of research activities in schools of public health in various parts of the world. A consultation on this subject was held in Geneva in November.

A series of five international symposia on society, stress and disease is being jointly sponsored by WHO and the University of Uppsala, Sweden. The first of these, held in April 1970 in Stockholm, concerned changes in the higher nervous processes induced by the psychosocial environment, and their relation to psychosomatic diseases. Experts in the various disciplines concerned with both the social and medical aspects of the relationship between man and his environment are participating in these symposia, the aim being to specify psychosocial stresses detrimental to health, identify the characteristics of high-risk groups, summarize current knowledge of the mechanisms involved and the possibilities of preventive action, and indicate lines for future research and methodology.

Much of WHO's work in 1970 was related to specific types of mental health problems. Psychogeriatrics is increasing in importance, in view of the growing proportion of old people in many populations and the considerable recent developments in research methodology. The subject was considered by a scientific group at a meeting held in Geneva in October. The group reviewed the present state of knowledge in this field, and made recommendations regarding future epidemiological and biological research and the organization of mental health services for the aged.

During a consultation in Geneva in November an outline for a comparative study on the care and rehabilitation of epileptics was prepared and recommendations were made for the development of a pilot study.

A second consultation on services for the mentally retarded was held in Copenhagen and London in November. The collection and utilization of information and the use of psychiatric registers for planning local services were discussed, and an outline was drawn up for surveys to be carried out in small, defined groups of the population in Canada, Denmark, the United Kingdom and the USSR. The medical, social and educational services available for mentally handicapped children will be studied under this project, and it is hoped that it will not only help in the development of the services in the areas concerned but also serve as a pilot study to improve the planning of national services.

As part of WHO's long-term programme to assess the extent of the problems of alcohol and drug dependence in different countries, and the local and national programmes designed to meet those problems, information obtained in reviews carried out in Czechoslovakia, the Netherlands, Poland and the United Kingdom was considered during a consultation in April. The data will be used for the further planning of co-ordinated services in those countries and will also provide documentation for a training course to be



HEALTH EDUCATION

The practice of health education forms part of the training of nurses and other health workers in a great number of projects assisted by WHO.

Above: A nurse trained at the WHO-assisted National School of Nursing, Niamey, Niger, gives a lesson in nutrition to mothers attending a maternal and child health centre.

Right: Teaching the principles of health is an important part of the work of this nurse at a maternal and child health centre at Kuala Langat, Malaysia.





OCCUPATIONAL HEALTH

Pneumoconiosis remains a serious health hazard in many industries, particularly in coal-mining (above).

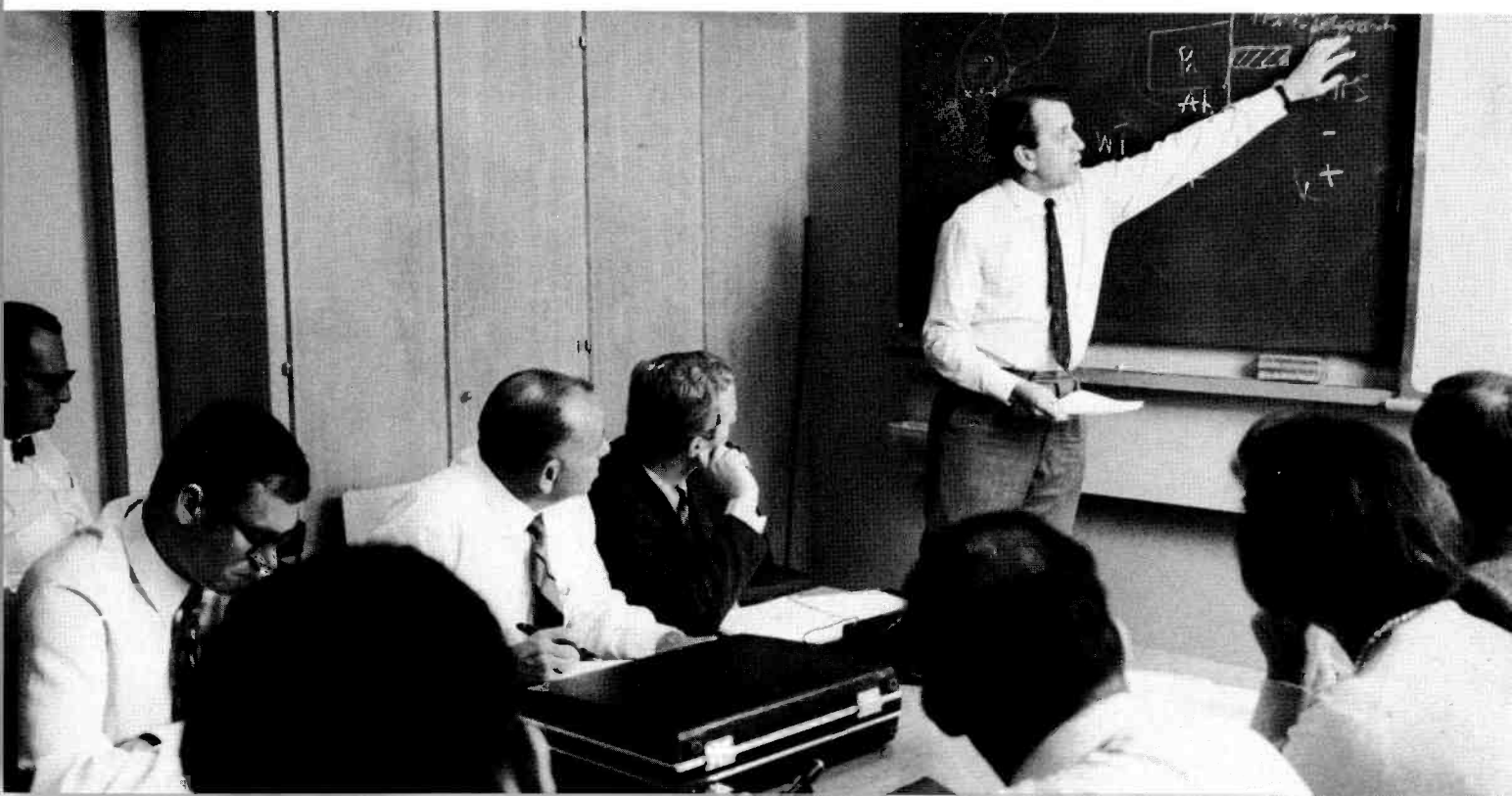
Left: In a WHO-assisted project, an employee in a Chilean porcelain factory is fitted with an apparatus for testing physical performance as he moves rock into a crusher. Air samples in this factory are measured for dust concentrations.



IMMUNOLOGY

In September 1970, WHO organized an inter-regional training course on biological aspects of antibodies and immunoglobulins at the WHO International Reference Centre for Immunoglobulins, Lausanne, Switzerland. It lasted three weeks and was attended by participants from 14 countries in all WHO Regions.

Left: Laboratory workers prepare reagents for immunochemical tests.





TWENTY-THIRD WORLD HEALTH ASSEMBLY

Professor Hippolyte Ayé, Minister of Public Health and Population, Ivory Coast (above), was elected President of the Twenty-third World Health Assembly.

Below: Mr. Winspeare Guicciardi, Director-General of the United Nations Office in Geneva, addresses the opening meeting on behalf of the Secretary-General of the United Nations.



held in 1971. Preparations were made to carry out similar reviews in Belgium, France, Spain and Switzerland.

An investigation of methods of reporting suicide has been started with a view to improving the reliability of suicide statistics for use in research. Data obtained in Denmark and the United Kingdom have been compared, and preparations were made to extend the study to other countries.

The Organization continued to collaborate with the United Nations Social Defence Research Institute on the mental health aspects of the prevention of crime and treatment of offenders. Recommendations on research in this field and on WHO's future collaboration in the United Nations Social Defence Programme were made during a consultation held in Rome in December. In particular, forensic diagnosis and classification and the psychiatric treatment of offenders were recommended as subjects that might usefully be studied by WHO.

WHO-assisted research was continued on various biological aspects of psychiatry. The International Reference Centre for Information on Psychotropic Drugs, at Chevy Chase, Md., USA, worked closely with the three regional reference centres—in Sapporo (Japan), Dakar (Senegal) and Basle (Switzerland)—the International Reference Centre for the Study of Adverse and Side Effects of Psychotropic Drugs, in Paris, and the collaborating laboratories. The psychophysiological investigation of children with a high risk of mental disorders, begun in Mauritius in 1969, was continued; the aim of the project is to find means of preventing mental breakdown among children showing early signs of risk, and at the same time to gain a better understanding of the role of psychophysiological mechanisms and genetic and environmental factors in the development of schizophrenia. A study on the effects of malnutrition on mental development was started in the United Republic of Tanzania, and the results, together with other information on the subject, were considered by the Joint FAO/WHO Expert Committee on Nutrition at its meeting in November, when it discussed, *inter alia*, the psychological consequences of protein-calorie malnutrition.

In view of the urgent need for standardization of psychiatric diagnosis, classification and statistics, a series of annual seminars has been organized by WHO to work out internationally acceptable systems that will facilitate understanding between psychiatrists, public health administrators and others concerned with mental health. The sixth annual seminar—held in Basle, Switzerland, in December 1970—dealt with neurotic and psychosomatic disorders, and was attended by the group of 12 experts (from seven

countries) who have been collaborating in the programme since it began, as well as by psychiatrists from six countries in the European Region. As in previous years, written case histories and videotaped recordings of interviews with patients were assessed by the participants, and their diagnoses served as a basis for discussions to work out a standardized system for diagnosis and classification.

Following the completion of the first phase of the international pilot study of schizophrenia—in which nine field research centres, using standardized screening and assessment procedures, each identified at least 125 cases of functional psychosis, consisting mostly of schizophrenics—intensive follow-up examinations of the patients were started by the centres. The Organization began an analysis of the data obtained, and the first volume of the report on the study was prepared. Standardized schedules for identifying cases of schizophrenia now exist in nine languages.

Occupational Health

In 1970 the Organization increased its activities in occupational health in three main fields: the promotion and establishment of national occupational health programmes not only for workers in large manufacturing industries but also for those in occupations such as mining, agriculture, small industries and other trades; the initiation of a new policy in training and education in occupational health directed particularly to the demands and local conditions in developing countries; and the investigation of problems that have barely been touched upon in the past, among them being the study of the exposure of workers to the combined effects of multiple stresses that cause complex pathological states and thus necessitate a review of standards of health and safety.

Standards of and measures for occupational health are in transition throughout the world. Certain industrialized countries—even some with a long history of industrialization—are actively revising the organization of their occupational health schemes in the light of new experience, and developing countries are trying to meet the demands imposed by recent industrialization and by new working processes that affect the health of the productive manpower as well as of the community as a whole.

National projects in occupational health were started with the assistance of WHO in 12 countries in 1970. In Indonesia, for example, WHO is participating in a project for the setting up of occupational health and industrial hygiene services involving the establishment of a National Institute of Occupational Health and of three regional centres. A national plan of

work laying down the type of services, training and research to be undertaken by this institute during the period 1970-1974 was formulated. The main features of the plan are that it provides for the co-ordination of different national health and labour programmes and defines the role of public health services in this field. A similar project to co-ordinate occupational health services in the Philippines is being carried out in co-operation with ILO. The main features of a project in China (Taiwan) are to assist in promoting the activities of three occupational health centres under the Provincial Health Department and in establishing a demonstration project in which field investigations are made and measures taken to improve health conditions in industry and mining. In India, the inauguration in November 1970 of the Occupational Health Research Institute in Ahmedabad was marked by the holding there of a WHO-assisted symposium on the place of occupational health in undergraduate medical education. This institute is operated by the Indian Council of Medical Research and, in addition to its training and research activities, provides direct services to small-scale industries. In Malaysia and Singapore, occupational health units were established in the Ministries of Health with assistance from WHO. These units co-operate closely with the labour inspectorate and, in addition, undertake field investigations and provide advice to small and large establishments. Assistance to Pakistan included the establishment of industrial hygiene programmes through the national health services and universities which will serve the dual purpose of services to industry and mining as well as training of health personnel. A similar project was initiated in Iran.

One feature common to most of the projects mentioned above and to similar WHO-assisted projects in other countries is that they are designed to function in co-operation with existing preventive health programmes, such as those for the control of parasitic and other communicable diseases, to the benefit of both types of service.

In the European Region, a working group on the organizational patterns of occupational health services, held in Moscow in May, explored the diversity of occupational health services provided in European countries and recommended measures to improve such services, not only to prevent occupational diseases and injuries but to enhance the general health of working populations. WHO also participated in a symposium on the health problems of industrial progress in developing countries, organized by the London School of Hygiene and Tropical Medicine; the main emphasis was on the effects of environmental factors such as housing, general sanitation and water supply on the health of the working population.

The problem of providing adequate education and training to meet the needs of the developing countries is a cause of major concern. In this connexion, WHO organized an inter-regional seminar at the Institute of Occupational Health and Air Pollution Research in Santiago, Chile, in November, when senior public health officers and university staff from Latin American and African countries discussed the training of health personnel in occupational health and the particular needs of the developing countries.

In countries in the process of becoming industrialized there is an acute need for specialists in industrial hygiene, who are key persons in the evaluation and control of physical and chemical health hazards in the working environment. To alleviate this situation, WHO helped to organize at the School of Public Health in Zagreb, Yugoslavia, a nine-month course in industrial hygiene, starting in October 1970, for participants from Indonesia, Iran, Iraq, Pakistan, the Philippines, Sudan and the United Arab Republic. This course is the first of its kind to adapt industrial hygiene methodology to the health conditions prevailing in developing countries.

In the field of research, assistance was given to a number of countries to undertake a wide range of epidemiological or other investigations of occupational health problems. Both in developed and in developing countries small industries raise important occupational health problems. Workers in these industries usually compose a substantial sector of the total working population and face a great variety of health problems, yet adequate health services are frequently not available for them. As a preparatory step to assisting developing countries to organize appropriate health services for small industries a consultation was held in October to review such experience as has been gained in this field. The Organization gave support to research programmes in countries in four WHO Regions to investigate the health conditions in small industries and to assess their needs. Research on respiratory diseases due to exposure to organic and vegetable dusts in predominantly agricultural countries was extended to investigate the effects on health of tobacco dust in Indonesia and Turkey.

As part of the Organization's programme for the study of the health of workers exposed to a combination of factors, including chemical and physical agents, an investigation was begun into the combined effects of exposure to toxic chemicals and heat stress in Japan. A consultation was also held in 1970 on establishing permissible limits for human exposure to certain toxic agents; this provided guidelines for further investigations of combined exposures as well as for monitoring the environmental and health conditions of the working population.

Continuing its support of studies on environmental and work physiology, the Organization initiated research in Bolivia into physical performance at high altitudes and adaptation to conditions there. It is expected that research into the mechanisms of the cardiovascular adaptation of persons exerting physical effort under conditions of low oxygen intake will be of value in clarifying etiological factors in cardiovascular diseases as well as in establishing standards of performance for workers in high mountain areas.

WHO also participated in activities to increase transport safety, both on the roads and at sea. Studies of the physical and mental fitness required for the licensing of motor vehicle drivers were pursued in co-operation with the Inland Transport Committee of the Economic Commission for Europe. On behalf of the Inter-Governmental Maritime Consultative Organization (IMCO), and in collaboration with ILO, the Organization undertook the revision of a guide to medical first-aid in case of poisoning resulting from the transport of dangerous goods at sea. The revised text was submitted to the November meeting of the IMCO Sub-Committee on the Carriage of Dangerous Goods. This text, when published, is designed to be used in conjunction with the *International Medical Guide for Ships*, which was produced jointly by IMCO, WHO and ILO in 1967.

Another aspect of the Organization's work related to the sea-going community was the setting up in 1970 of two pilot centres for the provision of preventive and curative health services to seafarers (in Auckland, New Zealand, and Gdynia, Poland).

At the Fourth International Congress on Ergonomics, which was held in Strasbourg in July, WHO presented a document defining activities in this field relating to the protection and promotion of health. A manual entitled *Introduction to Ergonomics* was prepared by WHO for publication as a teaching aid for industrial physicians and hygienists.

In accordance with resolution WHA23.47 of the Twenty-third World Health Assembly, the Organization has undertaken a preliminary study of health conditions in the mining industry in the African Region and the Region of the Americas. This study will form the basis for joint ILO/WHO consultation on occupational health of miners, to be reported to the Twenty-fourth World Health Assembly.

With regard to occupational risk of cancer, WHO participated in a study group on the evaluation of the potential carcinogenicity of chemicals to man, organized by the International Agency for Research on Cancer (see also page 47).

Immunology

One of WHO's aims in immunology is to encourage research into the immunological aspects of diseases of public health importance; to make the results as widely available as possible; and to promote their application in clinical medicine and public health. Another is to extend the teaching of immunology in medical schools and in postgraduate education. WHO has therefore established a number of immunology research and training centres.

The immunology research and training centres established at Ibadan, Nigeria (for Africa), São Paulo, Brazil, and Mexico City (for Latin America), and Singapore (for South-East Asia and the Western Pacific) are co-ordinated by the WHO Research and Training Centre for Immunology at Lausanne, Switzerland. All the centres have organized courses in immunological theory and techniques. They have also carried out research in collaboration with the institutions in which they are lodged, as well as with other institutions in their areas. Experienced immunologists visited the centres to lecture and to collaborate with local medical personnel. A sixth centre, designated late in the year at the School of Medicine, American University of Beirut, in Lebanon, will provide similar services for the area in which it is situated.

The centres at Ibadan, São Paulo, and Singapore each organized a four- to eight-month course in immunology for postgraduate students in 1970. A more advanced course was organized at the centre in Mexico City.

A specialized three-week course on the biological aspects of antibodies was held at the WHO International Reference Centre for Immunoglobulins at Lausanne, Switzerland. It was attended by WHO fellowship holders from 14 countries and consisted of lectures and seminars combined with laboratory work. Emphasis was placed on recent developments in immunology and on new concepts in relation to complement, antibodies in secretions, antibodies responsible for immediate-type hypersensitivity, and immunopathological processes—especially those involving antibodies and complement. The laboratory programme included antibody and immunoglobulin isolation and quantitation, the assessment of various activities of complement, and immunofluorescence techniques. The specific aim of the course was to present recent advances in the theoretical and practical aspects of immunology with special emphasis on disease in man.

Because of the increased demand for clinical immunologists, and as a step towards better and fuller teaching of immunology, WHO, with the Danish International Development Agency, organized

a course for teachers of immunology from a number of countries, in Copenhagen in March. The course covered basic immunology and its application to clinical medicine. It also included demonstrations and visits to laboratories in teaching hospitals.

The Research and Training Centre for Immunology at Ibadan, Nigeria, was requested by the University of Ibadan to organize the teaching of immunology at the Faculty of Medicine until such time as a department of immunology was established.

During the year the research programme at the Research and Training Centre for Immunology at Lausanne included work on immune globulins and immune responses in secretions. Studies of antibodies and immunoglobulins in intestinal secretions of patients convalescing from cholera were made in collaboration with the Cholera Research Centre at Calcutta, India. The antibody content of the secretions was determined, and the antibody activity of different immunoglobulin classes, especially IgA, was measured. The immunoglobulin content of the secretions was also measured. Patients receiving various forms of cholera vaccines are being studied, and the results obtained from convalescent patients will be compared with those from vaccinated patients. This will provide a better understanding of the effects of vaccine administration, with the object of discovering better methods of immunological protection from infection.

Preliminary studies were carried out to investigate the immune response in the female genital tract. The development of an adequate immune response at this site may be of great value in protection against local infection, and immunization against sperm could possibly be carried out as a means of preventing conception. Studies have shown that the immunoglobulins present in vaginal secretions have characteristics similar to those of immunoglobulins in other secretions and not necessarily of immunoglobulins present in serum. This indicates that these immunoglobulins (and hence antibodies) are produced locally. Antibody activity to *Trichomonas* antigen was investigated and was found to be present, especially in the IgA fraction of secretions. These studies strongly suggest that a local immune response does occur in the female genital tract, and they emphasize the need for further exploration of this response to pathogens and semen.

Experiments in guinea-pigs showed that local antibody production occurs in the respiratory tract following administration of antigen into the tract. Furthermore, lymphocytes characteristic of cell-mediated immunity were detected for the first time in secretions of the tract. The finding that cell-mediated

immunity may be a component of the local immune response in secretions may be of fundamental importance in understanding immunity to respiratory diseases. It may also provide an indication of how more effective vaccines can be developed.

The International Reference Centre for Immunoglobulins at Lausanne completed its international collaborative studies on a reference preparation for use as a standard for the estimation of human serum immunoglobulins IgG, IgA, and IgM. A description of the proposed standard was published in the *Bulletin*.¹ Studies were also completed on research standards for human IgD and IgE.² These research standards have been distributed internationally and should facilitate the reproducibility of immunoglobulin estimations in different laboratories.

The Research and Training Centre for Immunology at Ibadan conducted research in collaboration with the University of Ibadan. One of its projects concerned the nephritis associated with quartan malaria. This problem is of local public health interest, and it also has much wider implications. In this case the antigen is known, and an understanding of its pathogenesis may provide clues to the mechanisms responsible for producing renal lesions in nephritis occurring in parts of the world where unknown antigens exist. Immune complexes were demonstrated on basement membranes of the vessel walls of glomeruli from renal biopsies of children with the nephrotic syndrome. These complexes included immunoglobulins IgG and IgM.

Another project concerned the heterophil antibody (similar to but not identical with Forssman's antibody) that occurs in experimental trypanosomiasis in monkeys. This has been demonstrated in naturally occurring cattle trypanosomiasis. The centre is conducting a study in collaboration with the Department of Veterinary Medicine at the University of Ibadan and the WHO-assisted trypanosomiasis project in Kenya in an effort to make use of this antibody for diagnostic purposes.

The centre at Ibadan has also carried out research on reference preparations for immunoglobulins and has prepared a reference preparation containing high levels of immunoglobulins. This work was done because the levels of immunoglobulins in the international reference preparation (supplied by the International Reference Centre for Immunoglobulins, Lausanne) are lower than those in the populations of Africa and some other parts of the world.

¹ *Bull. Wld Hlth Org.*, 1970, **42**, 535-552.

² *Bull. Wld Hlth Org.*, 1970, **43**, 607-609, 609-611.

In collaboration with the Ibadan blood transfusion service, levels of IgE in serum from blood donors were measured. Plasma with high levels was collected for the preparation of an IgE standard to be distributed by the International Reference Centre, Lausanne. Serum levels of this particular immunoglobulin are higher in African than in European populations. The reasons for this elevation are not clear, and an effort is being made to investigate this phenomenon.

High levels of IgM have been found in malaria patients with splenomegaly. Attempts have been made to characterize the IgM serologically, in collaboration with the Department of Haematology at the University of Ibadan. Several other small research projects on local problems are in progress.

The several institutions forming the Research and Training Centre for Immunology, Mexico City, carried out research on all aspects of clinical immunology, especially on complement deficiencies, on the immunochemistry of *Mycobacterium leprae*, and on the metabolic activity of macrophages in leprosy. They are at present undertaking an investigation on the effects of malnutrition on the immune response.

Research at the Research and Training Centre for Immunology, São Paulo, concentrated on two local problems: the effect of immunosuppressive treatment on pemphigus foliaceus and the influence of snake venom on the complement system. In addition, the biological activity of guinea-pig immunoglobulins on mast cell degranulation was investigated and a clear-cut difference in activity was found to exist between $\gamma 1$ and $\gamma 2$ subpopulations of antibody.

Developments in basic immunology, particularly in relation to cell-mediated immunity and factors regulating the immune response, led WHO in 1970 to concentrate on attempts to apply new knowledge to preventive and clinical medicine. In March, WHO organized a conference on Rh immunization at the International Reference Centre for the Use of Immunoglobulin Anti-D in the Prevention of Rh Sensitization, London. A scientific group met in October to consider the same subject and recommended that research should be undertaken on, *inter alia*, the mechanism of prevention of isoimmunization by passive anti-Rh antibody, and failure to respond to Rh immunization.

A meeting of investigators was held in Geneva in June to consider immunological problems in leprosy. Differences in the immune response between patients with the lepromatous form of the disease and those with the tuberculoid form were emphasized. The meeting reviewed the immunological techniques and experimental approaches that should be used in different centres so that results obtained might be

comparable. Several centres that are independent of WHO support have already expressed their interest in collaboration.

In preparation for the meeting of a scientific group (planned for 1971) on immunological services in modern hospital and public health practice, a meeting of immunologists took place in October at the WHO International Reference Centre for the Serology of Autoimmune Disorders, London. The meeting discussed the range of the specialty of clinical immunology and the techniques available for the study of the immune response that should be applied in every hospital laboratory, as well as those that should be available in specialist centres. It also considered the minimum requirements necessary for specialization in clinical immunology, methods of training, and establishments in which training can be obtained. The report of the meeting has been sent for review and comments to a large number of centres and individuals interested in and concerned with clinical immunology. This will form the basis for the discussions of the 1971 scientific group.

Advances in the understanding of the biological background of the immune response have made it possible to take a fresh look at immunodeficiency diseases. A meeting of investigators held in Geneva in June made new proposals for the classification of these diseases and suggested revised approaches to diagnosis and treatment. Recommendations were made for standardized, safe tests for the assessment of immune responsiveness in a large number of disease states where the immune response is suspected to be defective. Two international registries were established to record cases of therapeutic transplantation in immunodeficiency disease as well as the incidence of malignant tumours in patients with immunodeficiency diseases. The first registry, at the Department of Immunology of the Children's Hospital, Zurich, Switzerland, and the Department of Immunochemistry, Institut de Recherches sur les Maladies du Sang, Paris, is for all cases of primary immunological deficiency in which transplants of immunologically competent organs, cells or cell-products are made. The second is a registry of all cases of malignant tumours encountered in cases of primary immunodeficiency disease. This is extremely important because of the possibility that patients in whom immunological surveillance mechanisms are deficient may provide clues to the character of the immune response in resistance to cancer. The Department of Pediatrics and Microbiology at the University of Minnesota, USA, is collaborating in this work.

CHAPTER 8

EDUCATION AND TRAINING

Promotion of the education and training of health workers is an essential part of WHO's operational programme in all fields. This chapter is concerned with fundamental principles and procedures in education, including research into teaching methods and aids; with the co-ordination of such forms of assistance as the provision of teaching staff and fellowships; with medical education and the training of auxiliaries, and with the development of new approaches—for example, institutions to provide multiprofessional training in the health sciences. The training of particular categories of health personnel (such as nurses and sanitary engineers) is dealt with in the sections on those subjects.

International Education Year

The United Nations General Assembly designated 1970 as International Education Year in order to encourage countries to take stock of the situation in education and training and review existing systems, on the basic assumption that education includes all forms of training and is a lifelong process. The International Education Year was conceived as a concerted activity of the whole United Nations system, UNESCO having primary responsibility for the preparation of the international programme. It thus gave the specialized agencies an opportunity to combine their efforts, on the threshold of the Second United Nations Development Decade, to improve and adapt policies and practices that might help to satisfy the ever-increasing demands for education and training.

WHO's participation in International Education Year found various forms of expression. The choice of "Education for the health professions—regional aspects of a universal problem" as the subject of the technical discussions at the Twenty-third World Health Assembly focused attention on a matter of great importance to all countries. Through communication with national authorities, intergovernmental organizations and non-governmental organizations in official relations with WHO, and with members of WHO expert advisory panels, the Organization supplied information and suggestions for national activities

within the framework of International Education Year. Other forms of participation included the publication of special issues of the *WHO Chronicle*¹ and of *World Health* devoted to the education and training of health workers, radio programmes on medical education and an exhibition at the Palais des Nations, Geneva, organized jointly with other agencies (see also page 110).

One effect of International Education Year was to strengthen the co-operation between UNESCO and WHO in a field of vital significance for the development of the programmes of both organizations. A further example of this increased co-operation was the designation of a senior member of the staff of WHO to serve on the Governing Board of the UNESCO-sponsored International Institute for Educational Planning, in Paris, for a period of three years.

Education in the Health Sciences

During 1970 a number of missions financed jointly by the United Nations Development Programme (UNDP) and WHO visited various countries to assist the governments in studying plans for the development of institutions for the education and training of health personnel of all types. The increasing interest of UNDP in helping countries to train local cadres of health workers within the context of national development gives impetus for future action of WHO in the field of education. It will permit the Organization to help to develop a network of innovatory educational institutions that can serve as models to other countries in the establishment of new institutions on similar lines or in the adaptation of their existing educational systems.

The feasibility of creating a multidisciplinary teaching approach to the education of the health team was the subject of a consultation held in Geneva in November.

WHO helped to develop the work programme of the University Centre for Health Sciences in Yaoundé which is being established in Cameroon with assistance from the Special Fund component of UNDP for the

¹ *WHO Chronicle*, 1970, 24, No. 10.

multiprofessional teaching of medical and allied health personnel and at which the first year of studies was completed in 1970.

A joint UNDP/WHO mission visited Aleppo, Syria, to advise on the development of a modern scheme for the education of medical and allied health personnel within the structure of the local university and medical school. The Government incorporated the mission's recommendations in a request to the UNDP for assistance from the Special Fund in setting up a community-oriented faculty of medicine, similar to the University Centre for Health Sciences being developed in Yaoundé.

Visiting professors and advisers were recruited during the year for faculties and institutions in 23 countries, the main purpose being to develop and strengthen departments in the basic health sciences.

As in previous years teaching staff in professional medical and allied subjects and for the training of auxiliaries were assigned to teaching institutions at the request of governments. The numbers of staff so assigned, the subjects they taught and the countries where they worked in 1970 are shown in the table below.

Considerable interest was shown in the technical discussions at the Twenty-third World Health Assembly on "Education for the health professions—regional aspects of a universal problem". There were 225 participants from 94 countries and 11 inter-governmental and non-governmental organizations. The main conclusion was the need for a team approach to the delivery of health care by various groups of health workers, the functions of each group being defined and related to community needs. The participants stressed the importance of basing manpower planning and training on the analysis of health problems and the advisability of working towards multiprofessional faculties of health sciences where medical students could be trained in the community as well as in wards and clinics. Emphasis was also placed on the need for educational research and on WHO's role in helping countries to establish suitable types of training for their health personnel in the light of comprehensive health programmes in keeping with their particular needs. The report on the technical discussions was published in the *WHO Chronicle*.¹

¹ *WHO Chronicle*, 1970, 24, 444.

ASSIGNMENTS OF TEACHING STAFF, 1970

1. For training professional personnel * (by subject)

	Teachers	Months
Basic medical sciences	35	306
Paediatrics, maternal and child health . .	3	19
Clinical and related fields	30	235
Public health and preventive medicine (including statistics)	28	208
Dental education	4	20
Nursing	95	854
Environmental health	7	65
Veterinary medicine	7	11
	209	1718
For training auxiliary personnel	55	511
Total	264	2229

2. Countries and territories to which assigned

Afghanistan	5	Cameroon	4
Algeria	1	Central African Republic	3
Argentina	1	Ceylon	4
Barbados	1	Chad	2
Brazil	3	Chile	7
Burma	4	Congo, Democratic Re-	
Burundi	1	public of	15
Cambodia	1	Cuba	1

* Some instructors were engaged in the training of both professional and auxiliary personnel.

2. Countries and territories to which assigned (continued)

Dahomey	1	People's Republic of the	
Ethiopia	5	Congo	2
Fiji	1	Peru	2
Gabon	2	Philippines	1
Ghana	4	Qatar	2
Guatemala	1	Republic of Korea . . .	2
Guyana	3	Republic of Viet-Nam .	4
Haiti	1	Rwanda	2
India	22	Ryukyu Islands	1
Indonesia	6	Senegal	3
Iran	7	Sierra Leone	2
Iraq	7	Singapore	1
Jamaica	1	Somalia	10
Jordan	3	Sudan	2
Kenya	5	Syria	6
Laos	7	Territory of Papua and	
Libya	19	New Guinea	1
Malawi	2	Thailand	7
Malaysia	6	Tunisia	7
Mali	2	United Arab Republic .	7
Malta	1	United Republic of Tan-	
Mauritania	1	zania	5
Mongolia	2	Upper Volta	2
Morocco	1	Uruguay	2
Nepal	1	Yemen	13
Niger	2	Zambia	3
Nigeria	6		
Pakistan	2		
People's Democratic Re-		Total	264
public of Yemen	3		

Postgraduate Education

A consultation was held in Geneva in August to prepare guidelines for a study in the Regions on basic public health courses for physicians, and another in November prepared the basis for a comparative study of the organization of continuing education for health personnel. The outcome of both these consultations has been the provision of well-defined programmes for the systematic collection and analysis of data on which to base future planning and co-ordination by WHO in these two important fields.

A travelling seminar on the organization of refresher courses for medical staff in the Union of Soviet Socialist Republics, held in that country in October, was attended by senior medical administrators from developing countries. A report prepared by the participants in a similar study tour in the USSR organized by WHO in 1968 was published.¹

A major function in the teaching and training of health personnel has related to the increasing participation of WHO in family planning programmes (see also page 72).

During 1970 staff training courses were organized in Geneva in the subjects of public health administration and electronic data-processing (see page 114), and a number of seminars were arranged in co-operation with other organizations, e.g., the United Nations Institute for Training and Research, the Carnegie Endowment for International Peace, and the International Federation of Surgical Colleges.

Training of Auxiliary Health Personnel

The analytical study of the use of auxiliary health personnel, which started in 1969 in the United Arab Republic, was extended to include Brazil and Hungary. Preliminary reports from these three countries have been discussed with the principal investigators in order to improve the collection of information and thus obtain better definition of the different categories of health personnel and better training schedules. The co-ordination of work done in the three projects and the standardization of operational methodology will facilitate the comparison of the results of the study.

Guidelines have been prepared and distributed for the collection of information on the training of several groups of auxiliary personnel—medical assistants, dental auxiliaries, veterinary auxiliaries, pharmacy assistants and X-ray auxiliaries. This will allow the functions, titles and curricula of such staff in various

countries to be compared and analysed for relevance to actual needs.

Preparatory to the further development of training programmes for auxiliaries in Algeria, Nepal and Tunisia, the Organization helped in studying the existing training for such personnel in relation to their actual work.

Teacher Training and Teaching Methods

The development of educational facilities for health personnel is accompanied by an urgent need for more teaching staff and better teaching methods.

Following the recommendations of a consultation held in Geneva in October 1969 on a long-range teacher-training programme, an agreement was signed with the Center for Educational Development of the College of Medicine, University of Illinois, USA, for the preparation in pedagogy of teachers from schools of medicine and allied health sciences. Such teachers would then form the nuclei for regional and country centres for the training of faculty members. Several meetings on teacher training and teaching methods were organized during the year, among them an African regional workshop on medical education methodology, held in Kampala in October, a European regional seminar on modern medical teaching methods (see page 153), and a workshop on teaching methods, held in Manila, to help the medical schools of the Philippines to modernize their system of educational training.

A new activity started during the year is concerned with the evaluation of teaching aids and programmed courses in the health field. Many different models are being produced and international co-ordination is urgently needed. The Organization has therefore undertaken the task of evaluating certain standard teaching aids and the associated equipment so that it can provide reliable information on their content, cost and educational value, as well as advice on their use. The establishment of a media centre and the production and reproduction of simple visual aids are also envisaged.

Fellowships

Several improvements were introduced into the organization of the fellowships programme in order to bring about greater flexibility. These include arrangements for study within a fellow's own country, for language instruction for fellows studying abroad, and for interpretation for participants in travelling seminars and for similar groups.

An historical evaluation of the WHO fellowships programme was prepared during the year. On the

¹ World Health Organization (1970) *Postgraduate education for medical personnel in the USSR*, Geneva (*Public Health Papers*, No. 39).

basis of the criteria adopted for this and similar assessments in the past, it appears that 65-75 per cent. of fellowships achieve their purpose, some 5 per cent. fail, and for the remainder no final assessment can be made in the period covered by the evaluation. A procedure for continuing evaluation on a world-wide basis is under active study.

From 1 December 1969 to 30 November 1970, WHO provided assistance to enable 5627 individuals to study abroad. The Organization awarded 3830 fellowships for study (as compared with 3411 for the same period ending 30 November 1969), including 487 for undergraduate study; and 1797 fellowships for participants in meetings or other educational activities organized by WHO. Further information on fellowships awarded in relation to particular countries and projects can be found in Part III. In Annex 9 the numbers of fellowships are summarized by subject of study and by Region.

Co-operation with other Organizations

An assessment of the training programmes jointly assisted by UNICEF and WHO was prepared for discussion early in 1971 by the UNICEF/WHO Joint Committee on Health Policy to enable the two organizations to improve and bring up to date their training programmes. For the purpose of the assessment, surveys of recent and current jointly assisted training programmes were carried out in Ethiopia, India, Mali, Nepal, Pakistan, Paraguay, Republic of Korea, Turkey, and Uganda with the co-operation of the governments concerned.

Joint activities with UNESCO are mentioned earlier in this chapter.

Library and Documentation Services

There has in recent years been a growing interest in Member States in the development of medical libraries as an integral part of the improvement and extension of medical education.

The WHO Library, which now receives regularly each year over 3000 periodicals and some 2500 an-

nual reports and other serial publications, is one of the world's larger collections of current medical literature, and is called upon constantly to provide literature, usually in the form of photocopies, to medical libraries throughout the world. Regular use is also made of its facilities for study courses and in-service training for medical librarians and documentalists in receipt of WHO fellowships.

The scheme operated by the WHO Library for the international exchange of duplicate medical literature has been in operation for over 10 years, and 102 libraries in 42 countries are now participating. A clearing centre in Geneva maintains records of gaps that participating libraries wish to fill in their collections and of material they are prepared to offer for free disposal.

With the increase in the WHO Library's holdings and in the supply of medical literature to Member States it has become necessary to computerize certain library housekeeping records. Thus early in the year the first computer-produced list of periodicals available in the WHO Library was issued, containing nearly 5000 titles and references and giving in addition to the usual information on titles and holdings an abbreviated title for each periodical and a subject index. It is now planned to issue such lists at annual intervals as supplements to the monthly *WHO Library Acquisitions* which, in addition to its internal WHO distribution, is available on request to medical and scientific libraries throughout the world. A further computer operation was concerned with the ordering of periodicals for WHO regional offices, field projects and Member States. Over 6000 subscriptions are now placed to be sent to 400 consignees throughout the world, and a system has been developed by which orders will be computer-printed with a consequent saving of effort at all levels.

Finally, in the field of computer operations, mention must be made of WHO's collaboration in the Medical Literature Analysis and Retrieval System (MEDLARS) initiated and operated by the US National Library of Medicine. This system makes possible the automatic retrieval of citations to medical literature from a data base of over a million items.

PHARMACOLOGY AND TOXICOLOGY

The Organization's programme in the field of pharmacology and toxicology comprises pharmaceutical quality control; the evaluation of the therapeutic efficacy and safety of drugs; the surveillance of drugs with regard to adverse reactions; the prevention of drug dependence and abuse; the establishment and review of international standards for biological and similar products widely used for prophylaxis and therapy; and the evaluation of the safety of food additives and contaminants. The programme is designed to help minimize the risks that may be connected with substances used for the maintenance of health or the prevention or cure of diseases.

Pharmaceuticals

Because of the difficulties involved in securing the manufacture of consistently uniform batches of high quality drugs, the Twenty-second World Health Assembly, in 1969, recommended to Member States in its resolution WHA22.50 the adoption and application of a set of good practices in the manufacture and quality control of drugs, thus introducing a control system. The Assembly also recommended the adoption of a certification scheme which places on exporting countries the responsibility for ensuring that drugs manufactured for export attain the quality standards recommended by WHO.¹

Several Member States have taken steps towards the implementation of a control system and certification scheme in line with these recommendations and have made suggestions for their improvement. More experience is needed, however, particularly with regard to the administrative implications at the national level. The Twenty-third World Health Assembly therefore invited Member States to inform the Director-General of the steps they had taken to implement resolution WHA22.50, so that the subject might be more fully discussed at the Twenty-fourth World Health Assembly.

A draft supplement to the second edition of the *International Pharmacopoeia* was prepared in accordance with the recommendations of the WHO Expert

Committee on Specifications for Pharmaceutical Preparations at its meeting in November 1969; it contains 20 new monographs for antituberculous drugs and radioactive pharmaceuticals, seven new or revised appendices, and a number of amendments to monographs in the second edition. The draft was sent to Member States, members of the Expert Advisory Panel on the *International Pharmacopoeia* and Pharmaceutical Preparations, and other specialists for their comments, in the light of which the text was amended. Suggestions were also received for the revision of the *International Pharmacopoeia*, for which the preparatory work has begun.

The WHO Centre for Chemical Reference Substances, in Stockholm, is finalizing work on a number of substances needed for reference purposes in connexion with some of the monographs included in the supplement to the second edition of the *International Pharmacopoeia*. In addition, a large number of chemical reference substances will be needed for new monographs being established in accordance with recommendations made by the Expert Committee, and work has been started with a view to finding suitable substances.

At its meeting in Geneva in April the WHO Expert Committee on Nonproprietary Names for Pharmaceutical Substances, in addition to selecting international nonproprietary names for new pharmaceutical substances on the basis of requests received from national authorities or directly from manufacturers, reviewed the General Principles for Guidance in Devising International Nonproprietary Names for Pharmaceutical Substances.²

The twenty-third and twenty-fourth lists of proposed international nonproprietary names were published in the *WHO Chronicle*.³ The lists, containing 90 and 87 names respectively, bring the total of such proposed names to 2636. The tenth list of recommended international nonproprietary names, consisting of 175 proposed names to which no objections had been filed, or in respect of which objections had been withdrawn, was also published in the *WHO Chronicle*.⁴

¹ See *Off. Rec. Wld Hlth Org.*, 176, Annex 12.

² *WHO Chronicle*, 1970, 24, 437-438.

³ *WHO Chronicle*, 1970, 24, 119-142, 413-433.

⁴ *WHO Chronicle*, 1970, 24, 526-534.

The increasing emphasis laid on the importance of quality control of drugs has been reflected in a number of inter-regional and regional activities, including a second inter-regional course on the quality control of drugs held in Copenhagen (see page 272), and regional seminars dealing with specific aspects of the subject in the Region of the Americas (see page 211) and in the Eastern Mediterranean and Western Pacific Regions (see pages 252 and 264).

In the Eastern Mediterranean Region, where there is an increasing need for pharmacists, a special group meeting was held in Beirut in October to discuss modifications to curricula and teaching methodology in pharmacy (see page 160).

Drug Efficacy and Safety

The increasing number and variety of drugs and their wider availability in recent years have been accompanied by an awareness on the part of the medical profession, governments and the general public of the need to ensure their optimum therapeutic use without undue risk. The responsibilities of governments in assuring adequate control of the efficacy and safety of drugs are generally recognized. These responsibilities, as well as the fundamental contributions that WHO can make to the exercise of such control, have been the subject of discussions and resolutions of successive sessions of the Health Assembly.

Regulations formulated by governments for the control of the efficacy and safety of drugs vary widely from country to country, although they are based on similar principles. In accordance with the request of the Twenty-second World Health Assembly, the Organization has been examining possible ways of providing advice to governments in developing machinery for evaluating the therapeutic safety and efficacy of drugs. During a consultation held in Geneva in September, basic principles of drug control were formulated, guidelines for the organization of a national regulatory agency for drug control were drafted and the assistance that WHO could provide to governments was considered.

The intergovernmental exchange, through WHO, of information on the decisions taken by governments to limit the availability of drugs for reasons of insufficient safety was continued and 10 such notifications were received and communicated to Member States during the year. In May the scope of this information service was broadened, at the request of the Twenty-third World Health Assembly, to include the reporting of decisions by health authorities to withdraw or restrict the availability of drugs

because of lack of substantial evidence of their effectiveness. Four communications of this type were received and circulated during the year.

On the occasion of this extension of the intergovernmental drug information system an attempt was made to review the experience gained since its introduction in 1963. Its value lies in the prompt notification to government authorities of specific drugs or groups of drugs that have given rise to government action in another country. It also enables governments with limited facilities for drug control, when notified of action taken by other governments, to request more information through or from WHO and thus gain valuable insight into the scientific and administrative background to any decision. On the other hand, there is no means of knowing whether the present rate of reporting to WHO corresponds to the actual number of decisions worth reporting and whether the content of the reports circulated meets the needs of the recipient authorities. The views of Member States have been sought by means of a questionnaire containing a number of suggestions for the improvement of this international reporting system.

The introduction of control machinery and research in the evaluation of drugs in man are being impeded by a serious lack of specialists. The need for an immediate expansion in clinical pharmacology, a new medical discipline in many countries, was stressed by a WHO study group which met at the end of 1969. Its report, published during the year,¹ outlines the scope of clinical pharmacology, the training and the functions of clinical pharmacologists, and the organization of university departments in the discipline.

WHO continued to co-operate with the United Nations Industrial Development Organization in planning the establishment of pharmaceutical industries in developing countries. Within the framework of that co-operation, and at the request of the Twenty-second World Health Assembly, consideration was given to ways of ensuring the efficacy and safety of pharmaceutical preparations in such industries and, *inter alia*, to problems connected with traditional medicines.

There is growing concern among health authorities at the steady increase in drug consumption. The need for better data on the subject was stressed at the symposium organized by WHO in Oslo in November 1969 for health administrators of countries of the European Region. Ways in which WHO could help Member States to produce internationally comparable data were discussed at a consultation of experts in therapeutics and statistics, held in Geneva in September.

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 446.

As a result of the discussions, plans were made for a WHO pilot study to investigate in a few countries the feasibility of obtaining internationally comparable statistics on the relationship between morbidity and drug consumption.

Drug Monitoring

The primary objective of monitoring drugs for adverse reactions is to identify as early as possible the liability of a drug to produce undesirable effects that were not detected during clinical trials. International co-operation in this field is essential, and the area of observation must be broad enough to cover the genetic and environmental factors affecting the action of the drug.

The WHO drug monitoring centre, initiated in 1968 as a pilot research project and located in Alexandria, Va., USA, has continued to develop systems for processing, recording, storing, linking and retrieving data provided in case reports of adverse reactions to drugs recorded in national centres. It has established classifications of drugs and a terminology for recording adverse reactions, and particular efforts have been made to develop programmes to increase the effectiveness of the system as an early warning device. The achievements of the pilot project were reviewed in detail by the Twenty-third World Health Assembly,¹ which—in its resolution WHA23.13—requested that the project be developed to enter a primary operational phase, based at WHO headquarters in Geneva.

The evaluation of the pilot project demonstrated that such an international drug monitoring programme could yield substantial benefits with regard to the development of monitoring methodology, drug safety control, drug dependence, clinical pharmacology and therapeutics, congenital malformations and human genetics, and the international classification of diseases. Such benefits would be available for all countries—not only those participating in the programme. The Organization's provision of technical advice to national monitoring centres will be facilitated by the location of the project at WHO headquarters from 1 January 1971.

WHO-assisted studies were continued to develop systems for the identification of patients receiving drugs and a methodology for determining the nature and occurrence of adverse reactions and drug-induced disease patterns. These should provide the techniques required to investigate scientifically adverse reactions to drugs detected by the WHO international drug monitoring project. The system introduced in a group of hospitals in Aberdeen, Scotland, for the

recording of all drugs administered to patients, was extended in 1970 to a group of hospitals in Dundee. At an institute in Northern Ireland the study of intensive hospital drug monitoring programmes in Canada, the United Kingdom and the United States of America was continued. The purpose is to assess the comparability of the data obtained in these three programmes and establish ways in which they might be co-ordinated and analysed; the same data are being used in a study that was started in 1969 on the extent and severity of drug-induced diseases. Studies were continued at two anti-poison centres in France on the correlation between cases of accidental poisoning and attempted suicide and suspected adverse reactions to drugs used for therapeutic purposes.

Drug Dependence

The widespread concern at the serious health problems resulting from the self-administration of dependence-producing drugs, particularly among young people, was reflected in the discussions at the Twenty-third World Health Assembly. In its resolution WHA23.42 the Assembly recommended that WHO should encourage and assist research on drug dependence and further the development of improved preventive, treatment and rehabilitation programmes. It also urged Member States to promote such activities and requested the Director-General to develop means for the international collection and exchange of data on the prevalence and incidence of drug dependence, and on the human and environmental factors involved.

General principles for improving the effectiveness of preventive action, treatment and rehabilitation services were outlined by the WHO Expert Committee on Drug Dependence² at its meeting in Geneva in August. In considering current approaches to the management of drug dependence problems, the Committee recognized the desirability of implementing a common policy at national and international levels with regard to the control of the production, manufacture and distribution of certain dependence-producing drugs. However, it stressed that such a uniform approach would be neither appropriate nor feasible with regard to policies and programmes designed to help limit the development of interest in drugs on the part of potential users and to promote effective treatment measures. In the establishment of policies and programmes in the latter fields, full account should be taken of the socio-economic and cultural factors

¹ See *Off. Rec. Wld Hlth Org.*, 184, Annex 8.

² *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 460.

influencing local drug-taking behaviour, since these influences differed greatly in various regions of the world. However, where countries in a given region shared similar socio-economic situations and cultural patterns and values, it was important that they exchange information and endeavour to co-ordinate policies relating to prevention and treatment.

Particular attention has been paid to this aspect in the European Region, both by WHO and by other organizations concerned primarily with European affairs. A good example of this co-ordinated approach is provided by the review carried out in four countries to assess the problems associated with alcohol and drug dependence, and the local and national policies and programmes designed to meet these problems (see page 82).

The Organization's primary statutory function with regard to the international control of dependence-producing drugs is the provision of advice on relevant medical aspects. This it does mainly through the WHO Expert Committee on Drug Dependence which, *inter alia*, considers the appropriate international control status of individual drugs. At its meeting in August the Expert Committee considered one drug of the morphine type, and the Secretary-General of the United Nations was notified accordingly.

WHO continued to co-operate with the International Narcotics Control Board as well as with the United Nations Commission on Narcotic Drugs. Co-operation with the latter included participation in two special sessions—one concerned with the consideration of means of facilitating integrated international action on drug abuse, and the other with the development of a draft protocol for the control of certain dependence-producing psychoactive substances not at present under international control.

Technical data on a number of psychoactive substances that may induce drug dependence but are not under international narcotics control were compiled and published in a supplement to the *Bulletin*.¹ The review covers 253 psychoactive drugs and herbs that are considered to have an actual or potential capacity to produce central nervous system stimulation or depression, hallucinations, or distortions in perception, thinking or judgement, and that may have some dependence liability. It is hoped that it may facilitate the work of the technical experts during the United Nations conference which is to be held in Vienna in January 1971 for the adoption of a protocol on psychotropic substances.

The patterns and extent of the use of cannabis in various cultures were discussed by a scientific group at a meeting held in Geneva in December. The group considered the effects in man of acute intoxication and of long-term, moderate-to-heavy use of cannabis in various forms and doses, and made recommendations regarding the research required in order to obtain much-needed data on chronic toxicity.

Biological Standardization

The biological standardization programme—one of the oldest programmes of WHO—is traditionally concerned with the establishment of international standards and reference preparations of biological substances which are widely used in prophylaxis and therapy in human medicine, and to a certain extent in veterinary medicine. These international reference materials are intended for the calibration of national standards which are used as references in the assay of biological products for manufacturing or national control. The custody and distribution of international standards and reference preparations, as well as the organization of international collaborative assays for their establishment, are mainly carried out through the three WHO International Laboratories for Biological Standards in Copenhagen, in London and in Weybridge, England. The technical work is reviewed at regular meetings of the WHO Expert Committee on Biological Standardization.

Preparations are also established as international biological reference reagents; these are used in diagnosis for the identification of micro-organisms.

In recent years, WHO has formulated and published international requirements or specifications for a number of biological products, mainly vaccines and sera. These requirements are for the use of workers who are responsible for the production and control of biological preparations; they facilitate the exchange of the preparations between countries and help to ensure that these reach at least a minimum level of efficacy and safety. The twenty-first set of requirements—for the manufacture and control of snake antivenins—was prepared during the year.

At its meeting in November, the WHO Expert Committee on Biological Standardization considered reports on a number of substances. Among the antibiotics were neomycins, saramycetin, candicidin, and trichomycin, as well as replacements for the standard for tetracycline and the reference preparation of lymecycline. With regard to hormones, the Committee discussed a proposal for an international standard for a new hormone, glucagon, and replaced the standard for erythropoietin. In the group of immunological

¹ Isbell, H. & Chruściel, T. L. (1970), *Dependence liability of "non-narcotic" drugs*, Geneva (Bull. Wld Hlth Org., vol. 43, Suppl.).

substances, the Committee considered the replacement of diphtheria toxoid (plain), cholera vaccine, pertussis vaccine and egg lecithin, and, in the antibody group, materials to serve as references for the estimation of various classes of human immunoglobulins. The Committee established the international standard for blood coagulation Factor VIII (anti-haemophilic factor) and the international reference preparation of anti-nuclear factor serum (homogeneous)—the first of series of substances of importance in blood coagulation and in human auto-immune diseases respectively. Further anti-*Leptospira* sera were established as international reference reagents.

During the year, further efforts were made to help developing countries in establishing or improving laboratory facilities for the national control of biological products. An inter-regional seminar was organized in Tokyo, in October, to enable participants from countries with limited facilities for control work to discuss the principles and practical problems with experts involved in this work in countries with well-established control organizations. Also intended for developing countries is the guide to the "Development of a national control laboratory for biological substances", which was adopted by the WHO Expert Committee on Biological Standardization in 1969 and published during the year as an annex to the Committee's twenty-second report;¹ it has been widely distributed to governments and technical laboratories, and has been well received. Closer relations are being developed with national control laboratories for biological products, particularly with regard to the exchange of information and advice on problems encountered by the laboratories in their control work.

The results obtained over a number of years in an international collaborative study for the standardization of methods of conducting microbic sensitivity tests for antibiotics were assessed at a meeting, in June, of a scientific group which made a number of recommendations designed to improve sensitivity test performance. These methods for determining antibiotic sensitivity would be useful to Member States wishing to develop co-ordinated national services for monitoring antibiotic therapy.

A research programme designed to improve existing requirements for various biological substances was further developed during the year and a number of consultations were held. Problems in potency testing of pertussis vaccine and problems in the evaluation of diphtheria and tetanus toxoids, plain and absorbed, have been selected as the main subjects for collaborative research by a number of laboratories.

Food Safety

The rapid developments in food technology and the increasing volume of international trade in foodstuffs call for stringent and internationally accepted food purity standards. In the elaboration of standards the Organization is closely associated with the Codex Alimentarius Commission, which was set up in 1963 to implement the joint FAO/WHO food standards programme.

In 1970 the first four of a series of recommended international standards, formulated and adopted by the Codex Alimentarius Commission, were sent to Members and Associate Members of FAO and WHO for acceptance. The standards, which are compatible with the norms considered as best guaranteeing the promotion and protection of health, took a number of years to elaborate and are the result of a wide measure of intergovernmental co-operation. In addition some further international recommended standards were adopted by the seventh session of the Codex Alimentarius Commission in April. Standards, once accepted by a government, are mandatory.

The Commission also formulates principles applicable to the various stages of food production and handling. A basic code of general principles of food hygiene was circulated to governments, together with specialized codes for the hygiene of canned fruit and vegetable products and dried fruits. Unlike the standards, the codes of practice are of an advisory nature.

A set of general principles for the use of food additives was provisionally adopted by the Codex Alimentarius Commission in April. Internationally accepted rules on the nature and levels of additives that can be permitted in food are urgently needed because of the increased use of these substances in the last decade—whether as colours, emulsifiers, preservatives or other elements added to foods to enhance their appearance, taste, texture or keeping qualities. Food additives and processes (such as irradiation) must be subjected to the strictest regulation to ensure that no health risk is involved. The Twenty-third World Health Assembly expressed its concern at the potential health hazards from food additives, and decided to introduce for these substances an information service similar to that already in operation for drugs (see page 93). It invited Member States to inform the Organization immediately of any decision to limit or prohibit the use of a food additive and to supplement that information as soon as possible with the data on which the decision was based. Between the adoption of this resolution in May and the end of the year seven communications were received and circulated to Member States.

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 444, Annex 3.

Cyclamates and monosodium glutamate were among the substances discussed by the Joint FAO/WHO Expert Committee on Food Additives at its meeting in June.¹ This committee acts as an advisory body to the Codex Committee on Food Additives and is responsible for evaluating the toxicity of food additives and for establishing an acceptable daily intake for each substance considered, in the light of the toxicological data available. On the basis of recent work on cyclamates, the Expert Committee decided, pending further investigations, to withdraw the recommendation for a temporary acceptable daily intake it had made at an earlier meeting. For monosodium glutamate, the Committee recommended an acceptable daily intake applicable to the general population except for infants under the age of one year.

The Expert Committee gave much consideration to toxicity data on mercury, particularly methylmercury compounds which have been shown by analyses from some countries to contaminate fish and other foods of animal origin to an extent that may be toxic to human beings. The main source is pollution from industries and from the agricultural use of various organo-mercury fungicides. The Committee took the view that the biological data available did not allow an acceptable daily intake to be recommended for mercury but one was urgently required. Because of the serious health risks involved, however, it strongly urged that environmental pollution by mercury should be reduced to the minimum. In this connexion the Organization is providing support for studies at the National Institute of Hygienic Sciences in Tokyo on the toxicity of methylmercury compounds in monkeys and on correlation of the levels of mercury in hair and blood with the estimated intake of mercury in man. The results obtained may provide the information needed to make it possible to establish an acceptable level of mercury compounds in food. This level would be useful as a yardstick for accepting or rejecting a food commodity for human consumption.

A computerized estimate by WHO of the potential intake of a number of additives was also considered by the Expert Committee. The estimate was based mainly on data already available on average food consumption. A further study is to be made by WHO in collaboration with countries carrying out dietary surveys based on the recorded intake of foods by individuals.

At the joint meeting of the FAO Working Party of Experts and the WHO Expert Committee on

Pesticide Residues, held in Rome in November 1970, a number of pesticides were considered, including, for the first time, several herbicides. Regular or temporary acceptable daily intakes were recommended for six compounds which had not been considered at an earlier meeting. For a number of other compounds the meeting reaffirmed the acceptable daily intakes that had previously been recommended. Tolerance or practical residue limits were recommended for several other pesticides in certain food commodities.

The significance of increased incidence of liver tumours in mice exposed to certain organochlorine pesticides, such as dieldrin, was discussed at some length. The meeting agreed that the evidence available was insufficient for such compounds to be classified at present as carcinogens, and noted that the work initiated by the Organization and the International Agency for Research on Cancer on the long-term effects of DDT in rodents was still in progress (see page 41). Since no new information had become available, the meeting merely reaffirmed its previous recommendation on DDT—namely, that its use should be limited to situations where no satisfactory substitutes existed.

Outbreaks of poisoning due to biotoxins in seafood are giving rise to great concern, particularly as they result chiefly from the consumption of fishes that are not normally toxic. Moreover, the development of marine fisheries in tropical waters is increasing the risks of such outbreaks because of the abundance of biotoxins in warm-water organisms. A classification of marine intoxicants was published in the *Bulletin*,² with special reference to the oral biotoxins which will be of primary concern in the expansion of warm-water fisheries. As a first step in an attempt to establish the origins of these biotoxins, the World Life Research Institute, Colton, California, USA, was designated during the year as an FAO/WHO International Reference Centre for Documentation on Marine Biotoxins.

The Organization is providing assistance to the State Institute of Hygiene, Warsaw, for studies on the biochemical effect of some food additives on selected serum and liver enzymes in protein- and calorie-deficient rats. These studies were initiated in the search for more sensitive criteria for assessing the toxicity of such substances in food.

More information on work on the safety of food of animal origin is given on page 24.

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1971, No. 462.

² *Bull. Wld Hlth Org.*, 1970, 42, 69-88.

CHAPTER 10

RESEARCH

Co-ordination of Medical Research¹

As in the past, much of the Organization's co-ordinated research programme was carried out through the network of WHO reference centres and through contacts with institutions for collaborative research projects.

Annex 6 lists the WHO reference centres active in the various fields of the Organization's programme and their work is described in the relevant sections of this report. During 1970, seven international reference centres, six regional reference centres, two research and training centres and one serum reference bank were designated, bringing the total number of WHO centres to 200. Mention is also made in the appropriate sections of this report of the collaborative research projects in operation in 1970; of the total of 724, 150 were initiated during the year (see Annex 7).

Ten scientific groups were convened during the year, on the following subjects: microbic sensitivity testing of antibiotics; methodology for family studies of genetic factors; endocrine regulation of human gestation; advances in research on, and clinical experience with, methods of fertility regulation; health aspects of the supply and use of non-human primates for biomedical purposes; research in epidemiology and communications science; psychogeriatrics; prevention of Rh sensitization; development of studies in health manpower; the use of cannabis. Details of these meetings are given in the relevant sections of this report.

At its twelfth session, in June, the Advisory Committee on Medical Research reviewed the activities of two programmes: research in epidemiology and communications science (see page 99), and human genetics (see page 77).

The Committee also discussed the possibilities for further developing special WHO laboratories and training institutes, notably for the parasitic diseases (where the diminishing number of specialized laboratories and research workers is a cause of concern)

and for the biology of human reproduction. It examined the reports of three scientific groups—on multipurpose serological surveys and WHO serum reference banks,² health aspects of family planning,³ and treponematoses research⁴—and discussed the need for a wider distribution of WHO's *Technical Report Series* and for greater dissemination among medical students of information on the activities of WHO. In addition, the Committee explored the implications for health and medical care during the next two decades of present trends and anticipated advances in certain fields of biomedical research.

Under the WHO research training programme, initiated in 1961, grants are awarded to research workers to enable them to work abroad and widen their research experience in subjects of interest to WHO with a view to increasing their contributions to the research activities of their own countries on their return; 69 of these training grants were awarded in 1970. The exchange of scientific knowledge among investigators working on subjects of interest to WHO is also promoted by the award of grants to scientists to enable them to visit those in other countries who are working in similar or related fields; 34 of these grants were awarded in 1970. The grants awarded for research training and exchange are shown, by subject and type of grant, in Annex 8.

UNESCO and WHO collaborated with the Council for International Organizations of Medical Sciences (CIOMS) in organizing a round-table conference, in Geneva in September, on the training of research workers in the medical sciences, and on behalf of CIOMS the Organization published the proceedings of a similar conference held in 1969.⁵ Reference is made on page 105 to WHO's co-operation with CIOMS in the preparation of a proposed internationally agreed nomenclature of diseases as a complement to WHO's International Classification of Diseases.

² *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 454.

³ *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 442.

⁴ *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 455.

⁵ Council for International Organizations of Medical Sciences (1970) *Medical research: priorities and responsibilities. Proceedings of a round-table conference ... 1969*, Geneva, World Health Organization.

¹ This section summarizes some of the general aspects of the research programme. References to particular research activities will be found in other chapters, under the relevant headings.

Developments in Epidemiology and Communications Science

During the year the programme of research in epidemiology and communications science, which was reviewed by the Advisory Committee on Medical Research in June, was reorientated towards the primary goal of developing the knowledge, skills and resources that are necessary to "planning for health" in the widest sense of that term. The five main research areas of the programme defined in previous years (organization and strategy of health services, epidemiology of high-risk groups, health effects of urbanization, epidemiology of disappearing diseases, and mathematical studies on the theory of disease processes) have not been discarded, but since they are all inter-related and to some extent overlapping they have been incorporated as linked elements in the restructured programme. There are two major related aspects of investigation in this programme: the operational, or organizational, and the scientific. The operational aspect was the principal subject of discussion by a scientific group on research in epidemiology and communications science that met in October; the group underlined the need for work in this field to be oriented towards health planning. The primary concern at the operational level is to develop, as rapidly as possible, new methods of assisting the provincial or national health decision-maker to use his resources to the best advantage by a better understanding and control of the curative and preventive health care systems; efficient operation, in turn, depends upon a detailed scientific understanding of the interrelated factors affecting health.

As a first major step in developing an understanding of the operational aspects of planning for health, a field project was started in July in Colombia, under the joint conduct of the Colombian Government, PAHO and WHO. The first stage has been the formation of a planning team of national and international staff to identify and evaluate the various elements affecting planning for health within one province and to study the relationships between elements of provincial and national health planning. The team is also analysing the structure and functions of the different organizations with health responsibilities in the province, and in November it began an investigation of the health status of the population in relation to the services provided. One of the purposes of the project is to ascertain what data on health are being utilized for planning and decision-making and to indicate the type of data that would provide the optimum grounds on which to base decisions. The project is so designed that the investigations should identify the criteria by which to evaluate the success of the principles and techniques evolved; these, if

proved valid, should then be applicable, *mutatis mutandis*, for the improvement of health planning in other countries.

At the scientific level, two groups of studies may be distinguished: those dealing with the control of specific diseases (especially communicable diseases) for which biological and medical knowledge of the underlying mechanisms is already well founded and for which mathematical representations of the population dynamics can be constructed; and those dealing with health problems (often the chronic or non-communicable diseases) in which many interrelated ecological and sociological factors are involved and where the key elements await identification and definition.

One example of the first of these types of study is the investigation into the epidemiology and control of malaria in the African savanna being conducted in conjunction with the malaria eradication, immunology and vector control programmes. The collection of baseline data was begun in October, preparatory to the experimental-control stage which is planned for about 18 months later. A new mathematical model was constructed during the year permitting the quantitative description of the factors involved in malaria transmission. This will be checked against the epidemiological and field data and developed or modified as required.

A number of zoonoses provide opportunities to investigate the population dynamics and interactions of the animal reservoirs and vectors involved in maintenance and transmission of human pathogens in specified regions or in broad geographical zones. In collaboration with the Epidemiological Research Centre in Teheran, studies had been started in 1969 along these lines into certain diseases (e. g., rickettsioses, leptospirosis, plague) carried by small mammals. In 1970 the large collection of mammals and ectoparasites was completed and initial work on the analysis of results and on ecological zonation in Iran was begun (see page 270). A separate but related project is concerned with studying potential contact rates between animals that may play a role in the transmission of infections to man. A methodological field study has been undertaken in Switzerland to examine this question, and methods for analysis are being developed. A broader geographical study of existing data, being conducted in collaboration with an institute in the Union of Soviet Socialist Republics, is aimed at investigating the potential numbers of infectious cycles existing along latitudinal gradients as demonstrated by the known numbers of animal reservoir and vector species distributed along these gradients.

Identification and description of human population variables are necessary if the health planner is to take

due account of the structure of the population he is concerned with and the changes it is subject to. Four studies initiated or completed in 1970 explored different aspects of rural-urban migration and urban structure—in Colombia and the Federal Republic of Germany, in Iran, in New Zealand, and in Senegal. The first of these is an investigation of the distribution and levels of health disorders in urban areas (Cali and Hanover) and an attempt to relate the findings, by computer analysis, to factors of the physical and social environment; PAHO has made available the wealth of data concerning Cali that has been accumulated in the Inter-American Investigation of Mortality. In Iran, a study was conducted through the Epidemiological Research Centre, Teheran, to test the feasibility of a longitudinal health survey of recent immigrants. The third study deals with the social and physical adaptation of Tokelau Island migrants to settlement in New Zealand, and the fourth with the social and mental adaptation to modern urban life in Dakar of persons from rural tribal areas of Senegal. These investigations have uncovered a number of interesting possibilities for further study and have brought to

light several methodological problems for which solutions are being sought. These issues were considered in the context of a more general discussion on the health effects of urbanization at a consultation held in Geneva in November.

Action—particularly preventive action—by the health services when dealing with multifactorial health problems must be both economic and practicable. Data collection for the pilot study on the practicability of screening an adult male population for high-risk factors related to myocardial infarction and stroke in Zagreb, Yugoslavia, was concluded during the year. Analysis of the data is not yet complete but the preliminary findings have already provided valuable insight into ways of conducting multifactorial prophylactic trials in a given population. The methods used in this limited study will be applied in the light of the findings to a more detailed analysis, including a cost-benefit assessment, of the methodology of cardiovascular prophylaxis in two contrasting medical care systems in the Netherlands (Rotterdam) and the Union of Soviet Socialist Republics (Kaunas); the design for this larger-scale investigation was begun in 1970.

CHAPTER 11

CO-OPERATION WITH OTHER ORGANIZATIONS

WHO co-operated with other organizations of the United Nations system in preparing the international strategy for the Second United Nations Development Decade, beginning on 1 January 1971. The Organization was represented at meetings of the various bodies where the strategy was discussed—the Committee for Development Planning of the Economic and Social Council, the Preparatory Committee for the Second United Nations Development Decade established by the General Assembly, the Economic and Social Council and, finally, the twenty-fifth session of the General Assembly, which approved the strategy. In these meetings WHO sought to impress on the government representatives and the experts concerned the importance of the proposals on health that had been submitted by the Organization during 1969.¹ In the health sector the strategy aims at the establishment in developing countries of a programme that would include basic health services for the prevention and treatment of diseases, the establishment of teaching and research institutions and the provision of adequate supplies of potable water.

Preparations for the United Nations conference on the human environment to be held in Sweden in 1972 continued throughout 1970. The Organization took part in the meetings of the intergovernmental preparatory committee for the conference and of the *Ad Hoc* Working Group on the Human Environment established in 1970 by the Administrative Committee on Co-ordination (ACC) to ensure secretariat co-ordination in the preparations, and it collaborated with the conference secretariat. WHO is also assisting the Economic Commission for Europe in preparations for its conference on problems relating to the environment, to be held in Prague in 1971.

In its contribution to two reports of the Secretary-General of the United Nations relating to the sea, WHO emphasized its interest in the avoidance of marine and coastal pollution and in the protection of marine food resources. With the Inter-Governmental Maritime Consultative Organization and other agencies WHO participated in the work of the Joint Group of Experts on the Scientific Aspects of Marine Pollution.

In International Education Year activities that took place in 1970 the Organization co-operated closely with UNESCO, the agency primarily responsible for organizing the programme, and made a variety of contributions focused mainly on the education of medical and other health personnel. (For details see page 88.)

The Organization participated throughout the year in the activities of ACC, its Preparatory Committee and such subsidiary bodies as the Consultative Committee on Administrative Questions and the Consultative Committee on Public Information. It took part in the meetings of ACC sub-committees on the United Nations Development Decade; Human Resources, Education and Training; Marine Sciences and their Application; Population; Science and Technology; Statistical Activities; and Water Resources Development. It also participated in the work of the Inter-Agency Study Group on Evaluation (of programmes of technical co-operation) and the *Ad Hoc* Inter-Agency Meeting on Rehabilitation of the Disabled.

On the recommendation of ACC, steps were taken to open the Protein Advisory Group (formerly a FAO/UNICEF/WHO tripartite body) to all interested member organizations of the United Nations system.

At its forty-fifth session, held in January 1970, the Executive Board transmitted to the Twenty-third World Health Assembly the review of its organizational study on co-ordination with the United Nations and the specialized agencies² with its own conclusions (set out in resolution EB45.R34). The Twenty-third World Health Assembly accepted the Board's conclusions and requested the Director-General to continue to participate in co-ordination arrangements of the United Nations system. The Executive Board's review was subsequently widely distributed within the United Nations system and was made available to the Committee for Programme and Co-ordination and the Co-ordination Committee of the Economic and Social Council and the United Nations Advisory Committee on Administrative and Budgetary Questions.

¹ See *Off. Rec. Wld Hlth Org.*, 180, 81.

² *Off. Rec. Wld Hlth Org.*, 181, Annex 4.

In connexion with the World Plan of Action, for which WHO has contributed papers on health and on the health aspects of population questions, the Organization was represented at meetings of the Advisory Committee on the Application of Science and Technology to Development, as well as at regional meetings held by the Advisory Committee at the headquarters of the regional economic commissions of the Economic and Social Council.

Liaison with these commissions was further developed during the year with the appointment on a full-time basis of a liaison officer to the headquarters of the Economic Commission for Asia and the Far East in Bangkok. A liaison officer and a sanitary engineer were maintained at the headquarters of the Economic Commission for Africa. Liaison was maintained with the Economic Commission for Latin America and the United Nations Economic and Social Office in Beirut.

The Organization is co-operating in a study, requested by the United Nations General Assembly, of problems of human rights arising from developments in science and technology. A preliminary memorandum entitled "Health aspects of human rights and scientific and technological developments" prepared by WHO was transmitted to the Secretary-General in October and considered at the twenty-fifth session of the General Assembly.¹ The memorandum will be further considered by the Commission on Human Rights in February 1971.

With regard to the control of drug dependence and abuse, WHO continued to co-operate with the United Nations, and particularly with the Commission on Narcotic Drugs. In January the Commission considered a draft protocol on psychotropic substances, and in September it held a special session to consider *inter alia* the reduction of illicit demand for dependence-producing drugs of all kinds by means of educational and social programmes and treatment and rehabilitation. In parallel activities initiated as a consequence of resolution WHA23.42, WHO convened an expert committee on drug dependence in August to study the problem of reducing illicit demand for dependence-producing drugs (see page 94).

United Nations Development Programme

The Study of the Capacity of the United Nations Development System,² presented in November 1969 by the Commissioner, Sir Robert Jackson, was considered at various meetings during the year. After an initial review by the Governing Council of the

United Nations Development Programme (UNDP) in January, it was discussed by the executive heads of the specialized agencies and the Administrator of UNDP in a special session of the Inter-Agency Consultative Board (IACB) in February and at the special session of the UNDP Governing Council in March, when unanimous agreement was reached on the key proposals of the Capacity Study on country programming, and preliminary agreement on certain other principles.

The debate was continued at the Council's tenth session in June, held at WHO headquarters at the invitation of the Director-General. Emphasis was given to the proposal that the formulation, appraisal and approval of UNDP projects should be a continuous process. The Council considered problems arising out of the implementation of UNDP assistance, the evaluation of performance, the reinforcement of the role of the UNDP Resident Representatives, and the reorganization of UNDP headquarters. It approved the Consensus on ways of increasing the capacity of the United Nations development system. This was considered by the Economic and Social Council, and its provisions were subsequently approved by the United Nations General Assembly, which decided that they should be applied as from 1 January 1971.

The developments regarding the Capacity Study were closely followed by WHO and its views were brought to the attention of those concerned whenever its experience could be of assistance in defining new avenues of approach.

In addition to its consideration of the Capacity Study, the Governing Council of UNDP approved a further series of Special Fund projects, for 11 of which WHO was designated as executing agency. The seven projects approved at the January session were for environmental health, five being for the preparation of master plans to meet large-scale community water supply and sewerage needs for Greater Teheran (Iran), Abidjan (Ivory Coast), Greater Kathmandu and Bhaktapur (Nepal), Kompong Som (Cambodia), and Surinam. Two projects were for environmental pollution control, the first to establish a federal research and development centre for environmental pollution control in Czechoslovakia and the second to strengthen the institute of hydro-technical research in Romania to deal with water pollution.

At the summer session the four WHO projects approved were for assistance to the national health laboratories, Mexico; water supply for Sana'a and Hodeida, Yemen; public and environmental health control, Awash Valley, Ethiopia; a second phase in the project for development of the University Centre for Health Sciences, Cameroon (extending for three years—at an estimated cost of \$1.7 million—the initial phase approved in 1969). Supplementary

¹ United Nations document A/8055/Add. 1.

² United Nations Development Programme document DP/5.

assistance for further work in connexion with the Accra-Tema Master Plan for Water Supply and Sewerage, Ghana, was also approved.

The approval of these projects brings the number that WHO has been called upon to execute to 38 of the 1234 approved for UNDP financing; the funds for the WHO projects amount to \$33.4 million, or 3.5 per cent. of the overall Special Fund programme to date.

During the year, plans of operation were signed for Special Fund projects for sanitation and drainage for Bangui, Central African Republic; for the University Centre for Health Sciences, Cameroon (phase I); for a water supply study in Morocco (phase II); and for a centre for hospital maintenance and engineering in Venezuela. The plans of operation for the projects in Cameroon (phase II), Czechoslovakia, Iran, Ivory Coast, Nepal and Surinam, and for the regional project for a Pan American Programme for Health Planning, were negotiated during the year. Meanwhile preliminary activities started on projects for water supply in Algeria, Cambodia, Ivory Coast, Surinam and Yemen, on the water pollution control project in Romania, and on the national health laboratories project in Mexico.

Field work was completed during the year on the current phase of the sanitary engineering education and research project in Venezuela, the Accra-Tema water supply project (phase II) in Ghana, and the project for a sewerage system master plan in the Philippines.

WHO organized or participated in a number of UNDP preparatory assistance missions, often in collaboration with other agencies. Among the more important of such missions in 1970 were those to Syria to assist in the formulation of a Special Fund request for the Aleppo Medical School and for a wastes disposal project for Damascus, and that to Yemen for a health centre and training school.

Similar assistance to governments in preparing Special Fund requests, financed from WHO funds, included missions to Gabon, Kenya, Liberia, Madagascar and Sierra Leone (water supply and sewerage), Hungary (water pollution), the United Republic of Tanzania (trypanosomiasis) and Mongolia (brucella vaccine production).

Requests for Special Fund assistance for water supplies, sewerage and wastes disposal were received from the Governments of Afghanistan, Algeria, Ghana, Hungary, Iraq, Kenya, Liberia and Yugoslavia. Argentina requested assistance in planning the use of computers in health programmes; Cuba for the National Institute of Hygiene; Sudan for national health laboratory services; Syria for the Aleppo Medical School; and the United Arab Republic for a virus research training and vaccine production centre

in Agouza. A request was also received by UNDP for an inter-regional research project on the epidemiology and methodology of schistosomiasis control in man-made lakes. A consultation, jointly sponsored by UNDP and WHO, was held in Geneva to plan assistance for onchocerciasis control in West Africa (see page 34).

WHO continued to advise on the health implications of requests submitted by governments for Special Fund assistance in other fields and to propose measures to protect the health of the population. It participated in a growing number of Special Fund schemes being executed by other agencies; agreements with FAO, ILO and the United Nations provided for the transfer to WHO of some 460 man-months to cover the assignment of health specialists in 54 projects. WHO assistance has ranged over public health administration, epidemiological surveys, health training, sanitary engineering, biology and medical entomology. For the first time a separate project was developed for the health aspects of a project being executed by FAO, the Awash Valley scheme in Ethiopia. During the year WHO continued its work within the context of the Lower Mekong Basin development project being executed by the United Nations through its Economic Commission for Asia and the Far East; a sanitary engineer was assigned to deal with the health aspects of this project.

Co-ordination was intensified with the United Nations Fund for Population Activities, the administration of which has been entrusted to UNDP. The multidisciplinary nature of many family planning projects and the need to link these closely to WHO's own policies and programme called for special efforts to ensure proper co-ordination at all levels.

Activities under the Technical Assistance component continued at much the same level as in 1969. For regional and inter-regional projects, 1970 was the last year in which the system of "agency targets" was applied; the Governing Council, in considering the Capacity Study, decided that from 1971 onwards UNDP approval would be given on a project-by-project basis.

Details of the allocations made to WHO under the Technical Assistance component of UNDP are given on page 111.

The inter-regional activities previously financed under the Danish Special Contribution to the Technical Assistance component of UNDP, and for which WHO has been receiving some \$500 000 annually, were carried out for the first time under bilateral arrange-

ments by which an equivalent contribution of the Danish Government was made to the Voluntary Fund for Health Promotion.

Projects financed under both the Special Fund and Technical Assistance components of UNDP are shown in the list in Part III of the Report.

United Nations Children's Fund

The Executive Board of UNICEF, at its annual meeting held in New York from 20 April to 1 May, approved programme allocations for 1970 of US \$43 million, of which 47 per cent. was for health activities. The Board accepted a proposal made by the Executive Director that an attempt should be made to reach an income for the Fund of \$100 million by 1975, and manifested a growing recognition of the importance of manpower development.

The Board approved the recommendations contained in the report of the seventeenth session of the UNICEF/WHO Joint Committee on Health Policy for a more flexible strategy in the campaign against malaria.¹ It also approved plans, supported by WHO, for the extension of UNICEF's aid for programmes designed to associate family planning activities closely with the basic health services.

Considerable attention was given to the rural water supply project in India, a major undertaking of a clearly pioneering and demonstration nature, in which WHO also participates; technical advice was given by WHO on the sanitary engineering aspects of rural schemes in several Indian states.

Good working relations continue and WHO has been represented at all UNICEF programme preview meetings held this year.

United Nations Relief and Works Agency for Palestine Refugees in the Near East

WHO continued to support the health programmes of UNRWA by providing the Director of Health Services and three other staff.

Owing to the serious financial situation of the Agency, to staffing difficulties and to other circumstances beyond the Agency's control, certain curtailments were made in the provision of health services; priority was given to prevention of the introduction and spread of communicable diseases and to assistance to mothers and children.

The Twenty-third World Health Assembly examined a report on health assistance to refugees and displaced persons in the Middle East submitted by the

Director-General, together with the annual report of the Director of Health Services of UNRWA, and adopted resolution WHA23.52 on measures to safeguard health conditions amongst refugees.

World Food Programme

The health aspects of more than 100 current projects of the World Food Programme, and the agreements relating to them, were studied in 1970. Only about one-third of these were new projects—an unusually low proportion, owing partly to the increasing number of projects being extended or expanded to cover new fields. In fact, the investments of the World Food Programme in specifically health-promoting projects were substantially greater in 1970 than in the previous year (US \$67 million as compared with \$25 million). Many of the projects in preparation in 1969 have since been approved and are becoming operational. WHO now scrutinizes virtually every World Food Programme project in order to identify health implications and suggest ways of dealing with them. WHO also assists governments in the identification and formulation of health-promoting projects which would benefit from aid from the World Food Programme.

The nutrition project assisted by the World Food Programme in Colombia is still the largest of its kind, but several others designed to promote the development of rural and urban health services are being launched. The largest World Food Programme investment approved in 1970 involved a sum of US \$56 million for a dairy project in India which aims at the development of a national milk marketing and supply grid. The health implications were studied in detail and it is expected that as it develops this project will result in substantial health benefits to the populations concerned, not only the urban consumers but also the rural producers. This project, like many others, involves the services of several other agencies, including FAO and UNICEF.

Non-governmental Organizations

The working principles governing the admission of non-governmental organizations into official relations with WHO were examined in January by the Executive Board, which decided that no change was necessary at present. The Board requested the Director-General to continue to establish working relations with international non-governmental organizations wherever such relations would help in the attainment of the aims of the Organization, but recommended that the establishment of official relations be preceded by a period of at least one year of

¹ *Off. Rec. Wld Hlth Org.*, 186, Annex 2.

working relations, except when the non-governmental organization concerned obviously fulfils the criteria.

Official relations were established with the Christian Medical Commission, the International Association for Accident and Traffic Medicine, and the International Union of Pharmacology. This brought the number of non-governmental organizations in official relations with WHO to 85 at the year's end (see Annex 12).

The continued active co-operation between WHO and the Council for International Organizations of Medical Sciences (CIOMS) was facilitated during the year by the transfer of part of the CIOMS secretariat to Geneva. Mention has already been made (see page 98) of the participation of WHO and UNESCO in a CIOMS round-table conference in September. In that month the Organization was also represented at the Eighth General Assembly of CIOMS, which was held at WHO headquarters. The draft of a proposed internationally agreed nomenclature of diseases that had been initiated in 1969 by CIOMS with WHO assistance as a complement to WHO's International Classification of Diseases was completed in 1970 with the collaboration of CIOMS member societies; it includes some 2000 disease terms.

As it is not possible to summarize here the many varied activities of all the non-governmental organizations in official relations with WHO, the following examples of effective and mutually beneficial collaboration are provided by way of illustration.

Close co-operation and liaison continued with the League of Red Cross Societies, particularly with regard to emergency aid following disasters (see page 114).

The International Union against Cancer co-operated with WHO in arrangements for World Health Day 1970, on the theme "Early Detection of Cancer Saves Lives", and in meetings; it worked with the International Agency for Research on Cancer in the organization of courses, the granting of fellowships and the

editorial preparation of the second volume of *Cancer Incidence in Five Continents* (see also page 48).

The Organization worked with the International Society of Cardiology and its scientific councils in preparations for the VI World Congress of Cardiology in 1970 and for European Heart Week early in 1971.

Collaboration with the International Commission on Radiological Protection and the International Commission on Radiation Units and Measurements was continued on reports related to problems of radiation protection and radiation medicine; and WHO worked with the International Epidemiological Association on a manual of teaching methods in epidemiology.

Collaborative activities in research methodology included the development, with the International Union against Tuberculosis, of analytical methods for surveying trends of tuberculosis with a view to estimating the annual risk of infection among the population examined (see page 10). Research and training activities were subjects of collaboration between WHO and the International Planned Parenthood Federation; the Organization was host for a workshop on psycho-social factors in international family planning research, which was co-sponsored by that Federation and the World Federation for Mental Health. WHO also collaborated with the International Planned Parenthood Federation in establishing a regional family planning pilot centre in Tunisia (see page 73).

WHO took part with the International Union of Architects and the International Hospital Federation both in the preparation for and conduct of the third international public health seminar on methods of planning for hospital and other health institutions (see page 60). It also collaborated with the International Federation for Housing and Planning in its Thirtieth World Congress.

SUMMARY OF CO-OPERATION WITH OTHER ORGANIZATIONS

The following is an illustrative list of the main subjects of collaboration during the year between WHO and other organizations, apart from the co-operation mentioned above with UNDP, UNICEF, UNRWA, the World Food Programme and non-governmental organizations. Specific instances and details of co-operation are also to be found in other chapters of the volume.

United Nations and Related Agencies

United Nations

Economic and social development: continued participation in preparatory work for the Second United Nations Development Decade; participation in the sixth session of the Committee for Development Planning and of its Working Group on the Least

Developed among Developing Countries; increased co-operation with regional economic commissions; assignment of full-time liaison officer to ECAFE and maintenance of full-time liaison officer with ECA; advice on public health aspects of comprehensive rural and zonal development programmes; participation in the ACC Working Group on Rural and Community Development (see page 61).

United Nations Conference on the Human Environment (1972): representation at the inter-governmental preparatory committee for the Conference; participation in the ACC *Ad Hoc* Working Group on the Human Environment; continued co-operation through ACC with respect to conference preparations and arrangements; assumption of responsibility for preparation of conference papers.

Environmental health: continued participation in the ACC Sub-Committee on Water Resources Development; active participation in the Joint Group of Experts on the Scientific Aspects of Marine Pollution and contribution to Secretary-General's report; co-operation on environmental health aspects of programmes for regional development; continued assignment of WHO sanitary engineers at the headquarters of ECA (see page 58) and of ECLA; participation in activities of ECE relating to pollution.

Collaboration with the United Nations in the field of housing and urban planning to indicate public health and environmental health implications, including participation in the *Ad Hoc* Meeting of the Group of Experts on the Social Aspects of Housing in Urban Areas (organized by the United Nations Department of Economic and Social Affairs), the United Nations inter-regional seminar on improvement of slums and uncontrolled settlements; and the ECE second symposium on urban renewal; collaboration, through the WHO sanitary engineer attached to the Liaison Office with ECA, in ECA's housing and physical planning activities, including training courses for building contractors, and meetings on building costs and rural housing.

Lower Mekong Basin development programme: participation in public health aspects.

Statistics: co-operation with the ACC Sub-Committee on Statistical Activities and representation at meeting of the Statistical Commission; a study was begun of fetal, infant and childhood mortality (see page 68).

Dependence-producing drugs: continued co-operation with and participation in sessions of the United Nations Commission on Narcotic Drugs; co-operation with the International Narcotics Control Board; advice on drugs subject to international control and on drug abuse; continued co-operation on the development of draft protocol for international control of certain dependence-producing drugs (see page 95).

Population activities, including family planning: participation in the ACC Sub-Committee on Population; co-operation with the United Nations Fund for Population Activities; assistance in the training of United Nations Population Programme officers; participation in joint planning missions (see pages 72, 73, 74, 141 and 167).

Road traffic safety: co-operation with the Inland Transport Committee of ECE in studies of the physical and mental fitness required for the licensing of motor vehicle drivers.

Effects of atomic radiation: continued co-operation with the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR); provision to UNSCEAR by WHO of data on the use of radiation and radioisotopes in medicine in different countries for reports to the United Nations General Assembly on population doses from occupational and medical irradiation; in a programme set up by WHO to assist UNSCEAR in estimating the global risk of radioactive contamination, the strontium-90 content in samples of human bones from various areas was measured (see page 71).

Youth: participation in the ACC Sixth Inter-Agency Meeting on Youth (see page 74); collaboration with the United Nations in advancement of programmes concerning youth; representation by an observer at the World Youth Assembly convened by the United Nations.

Human rights: submission to the United Nations, pursuant to resolution WHA23.41, of a preliminary memorandum dealing with the health aspects of human rights in the light of scientific and technological developments (see page 102).

Rehabilitation of the handicapped: continued participation in the ACC *Ad Hoc* Inter-Agency Meeting on Rehabilitation of the Handicapped and in related advisory services; collaboration with the United Nations and ILO in preparation of a rehabilitation questionnaire for an inter-agency comparative study (see page 61).

Social development questions: collaboration in a United Nations inter-regional course on social planning in Amsterdam; continued participation in the ACC Sub-Committee on Human Resources, Education and Training at its 1970 meeting.

Programmes were organized for a working group of the United Nations summer interne programme.

Natural disasters: in accordance with resolutions of United Nations bodies and decisions of ACC, continued co-operation with the United Nations in the provision of assistance and preparation of documentation on procedures to be followed in the event of natural disasters.

Education: extensive co-operation in International Education Year, including technical discussions at the Twenty-third World Health Assembly on education for the health professions; special issues of the *WHO Chronicle* and *World Health* on education; co-ordination and design by WHO of an inter-agency photographic exhibit and preparation of a radio programme on medical education.

Office of the High Commissioner for Refugees

Collaboration with the Office in connexion with assistance to refugees, particularly in Africa, including provision of technical advice on suitability of sites for resettlement of refugees, consultation on health problems of refugees and provision of fellowships to refugees; representation at meetings of the Executive Committee; continuation of close working relations under the aegis of ACC.

United Nations Industrial Development Organization

Designation of a liaison officer with UNIDO; co-operation regarding the establishment of pharmaceutical industries in developing countries and public health aspects of industrial waste problems in development projects.

United Nations Institute for Training and Research

Organization of briefing or training sessions for fellows and study groups of the Institute; participation in a colloquium for senior staff of organizations of the United Nations system.

United Nations Social Defence Research Institute

Continued collaboration on the mental health aspects of prevention of crime and treatment of offenders; consultation on recommendations for research and on WHO's future collaboration in the Institute's programme (see page 83).

United Nations Institutes for Economic Development and Planning

Continued close collaboration with the institutes in Bangkok, Dakar and Santiago (see pages 60, 121, 130 and 142).

International Labour Organisation

Occupational health (see pages 84, 85, 150 and 168); drafting of manuals for practical guidance in radiation protection in hospitals and general medicine; Joint ILO/WHO Committee on Personal Health Care and Social Security (see page 61); collaboration in preparation of material for health education of workers (see page 65).

Food and Agriculture Organization of the United Nations

Nutrition: projects in various countries and regional activities (see pages 80, 123, 149, 159 and 167); Joint FAO/WHO Expert Committee on Nutrition (see page 79); continued co-operation in the Protein Advisory Group and in applied nutrition programmes (see page 79); contribution by WHO of a basic study on deficiency diseases for the Second World Food Congress organized by FAO (see page 80).

Food safety (see pages 96-97), including the Codex Alimentarius, the Joint FAO/WHO Expert Committee on Food Additives and the establishment of the FAO/WHO International Reference Centre for Documentation on Marine Biotoxins; participation in the FAO Technical Conference on Marine Pollution and the Effects on Living Resources and Fishing (see page 54); food hygiene (see page 24), including the training of specialists in a FAO/WHO course on meat hygiene and abattoir development.

Health hazards of pesticides: joint meeting of the FAO Working Party of Experts and the WHO Expert Committee on Pesticide Residues (see page 97); collaboration on the safe use of pesticides in agriculture (see page 41).

Communicable diseases, including trypanosomiasis and those diseases whose spread may be facilitated by irrigation and land reclamation schemes and man-made lakes (see pages 35 and 121).

Veterinary public health and zoonoses: WHO/FAO co-ordinated research programme on wildlife rabies in Central Europe (see page 22); Joint FAO/WHO Expert Committee on Brucellosis and collaboration through the FAO/WHO Brucellosis Centres (see pages 22 and 23); joint inter-regional seminar on the control of echinococcosis (see page 23); review of WHO/FAO co-ordinated programme of animal virus characterization (see page 26).

United Nations Educational, Scientific and Cultural Organization

Health education in schools (see page 64); continued co-operation in the health component of UNESCO literacy programmes; assistance to the UNESCO-sponsored Arab States Functional Literacy Centre (see page 158); representation at the third meeting of the UNESCO Panel for Evaluation of Experimental Literacy Projects, held in Iran.

Co-operation in educational projects on human reproduction relating to schools or youth programmes (see pages 76-77); collaboration in the UNESCO regional course in Seoul on the production and use of mass media for family planning programmes in Asia, and in the UNESCO regional workshop on population

and family education, in Bangkok; co-operation on scientific matters of mutual interest.

Education and training, continued co-operation; designation of a senior staff member to serve on the Governing Board of the UNESCO-sponsored Institute for Educational Planning.

Environmental health: increased collaboration with UNESCO in the International Hydrological Decade, with WHO acting as the technical secretariat for a working group on hydrological aspects of natural and artificial changes in water quality (see page 53); continued co-operation in the preparation of a research programme on man and the biosphere.

World Meteorological Organization

Publication of proceedings of a jointly sponsored symposium on urban climates and building climatology (see page 55).

Studies on meteorological factors in disease.

Inter-Governmental Maritime Consultative Organization

In collaboration with ILO, revision of a guide to medical first-aid in case of poisoning resulting from the transport of dangerous goods at sea (see page 85); consultation on problems of marine pollution, particularly through the Joint Group of Experts on the Scientific Aspects of Marine Pollution.

International Atomic Energy Agency

Continued consultation through liaison officers; various aspects of environmental radioactivity and radiation health (see pages 55, 70 and 71), including collaboration in revision of manual on safe handling of radioisotopes and in preparing manuals on radiation haematology and dosimetry in radiotherapy; joint IAEA/WHO project to compare radiation doses used in different countries in radiotherapy with cobalt-60 units; meeting of Joint IAEA/WHO Panel on the Absolute Determination of Radiation Dose and Absorbed Dose Standards; Joint IAEA/WHO Scientific Meeting on Biochemical Indicators of Radiation Injury in Man; participation in a symposium on dynamic studies with radioisotopes in clinical medicine,

a meeting on radioactive labelled compounds for use in medicine and biology, and a panel meeting on inhalation risks from radioactive contaminants; participation in meetings of IAEA panels to review the Agency's regulations for the safe transport of radioactive materials, and on peaceful uses of nuclear explosions.

In connexion with study of the role played by trace elements in cardiovascular function, collection by WHO of samples of sugar and rice from countries in all WHO Regions for analysis in the IAEA laboratory (see page 50).

Joint IAEA/WHO consultation on the prevention of iron deficiency (see page 80).

International Civil Aviation Organization

Studies, in collaboration also with the United States Federal Aviation Administration, on the possible corrosive effects of dichlorvos on materials used in aircraft construction (see page 44).

Other Intergovernmental Organizations

Council of Europe

Representation at meetings organized by the Council in connexion with the Second United Nations Development Decade. Co-operation with regard to narcotics and drug dependence; the development of human resources in the health field through education and training, including the training of laboratory technicians (see page 67); long-term programmes on environmental pollution control and mental health (see page 150).

Organization of African Unity

Continued co-operation, in particular with regard to epidemiological surveillance and communicable disease control (see page 119).

Organization of American States

Continued co-operation, including representation by an observer at the OAS General Assembly (see page 134).

CHAPTER 12

PUBLIC INFORMATION

In 1970 World Health Day was devoted to cancer, with the theme "Early Detection of Cancer Saves Lives". The International Union against Cancer and a large number of national cancer associations co-operated in arrangements for World Health Day observance. The French National League against Cancer organized a cancer week to coincide with World Health Day and published a poster jointly with WHO; the French postal authorities brought out a special stamp, and the United Nations did the same. The Union of Soviet Socialist Republics also produced a poster for the occasion. Australia, Belgium, Brazil, New Zealand, Norway, Switzerland, the USSR, the United Kingdom and the United States of America were among the countries where the World Health Day theme attracted attention in press, radio and television. The February-March issue of *World Health* was devoted to the theme, and UNESCO collaborated by publishing a special issue of the *Courier* dealing with cancer.

The material put out by WHO was not restricted to the prevention of cancer but covered also treatment, research and health education. Over 200 000 World Health Day posters were distributed in English, French, Russian and Spanish. A small photographic wall sheet on cancer was printed and distributed through the WHO regional offices. Six one-minute cartoon films conveying the principle that prevention is better than cure were produced by the Organization and distributed to television stations in 20 countries.

Twenty recordings for broadcasting were made in three languages on the World Health Day theme; 450 copies were distributed to 175 radio stations. The National Association of Educational Broadcasters in the United States of America distributed a World Health Day radio feature to 118 affiliated stations.

During the year some 150 press releases were issued from WHO headquarters and regional offices. Among the subjects widely reported in the world press were the dangers of smoking, the WHO report on chemical and biological warfare, air pollution and the dangers in the use of insecticides. The spread of cholera in the second half of the year was widely reported. More than 50 statements and interviews on this topic were given by

WHO to radio and television stations in different parts of the world. Since WHO was in the news on account of cholera, a number of newspapers published during this period articles of more general interest on the Organization.

Ten issues of *World Health*, the magazine of WHO, were published in English, French, Portuguese, Russian and Spanish. The Russian edition, published in co-operation with Medicina, Moscow, was increased from 20 000 to 30 000 copies. The publication of two new editions, in Japanese and Hindi, was started during the year; they are to appear quarterly in the form of digests. The Japanese edition was brought out to coincide with the opening of EXPO '70 in Osaka and was published in 30 000 copies. The German Green Cross continued to publish an edition in German and made special reprints of the January 1970 issue on rheumatism and the July 1967 issue on drugs. Altogether, the regular distribution of the magazine exceeds 180 000 copies per issue. Additional printings were made to meet requests for the 1970 issues on cancer, cardiovascular diseases, rural health and eye diseases.

The October issue of the magazine celebrated the twenty-fifth anniversary of the United Nations and gave special prominence to the United Nations Development Programme (UNDP). As a contribution to International Education Year, the November issue was devoted to educational questions. A press release is usually published to draw attention to each issue and to stimulate the wider diffusion and reproduction in other publications of articles and photographs appearing in the magazine.

WHO continued to collaborate in the "Development Support Information" programme initiated by UNDP in co-operation with the specialized agencies concerned in UNDP/Special Fund activities. Press, radio, photographic and television reporting on development projects was systematically encouraged, and multi-media assignments to the Central African Republic, Kenya, Malta, Morocco and Uganda were organized. To avoid duplication of effort and obtain a wider use of material, a co-ordinated inter-agency work plan for 1971 has been drawn up by the agencies

carrying out joint information activities in support of development projects.

WHO co-ordinated plans for and designed a large inter-agency photographic exhibition devoted to the twenty-fifth anniversary of the United Nations and to International Education Year. Nearly all members of the United Nations system took part. The exhibition was opened during the Twenty-third World Health Assembly and was on view until mid-November at the Palais des Nations in Geneva. It is estimated that it was seen by 200 000 people.

The Organization provided photographs and material for exhibitions including the United Nations Pavilion at EXPO '70 in Osaka, the Tenth International Cancer Congress at Houston (Texas), the VI World Congress of Cardiology in London, and the 30th International Congress of Pharmaceutical Sciences in Geneva.

Some 50 000 photographic prints were distributed during the year. They were widely used in magazines, books and other publications in over 100 countries. New photographs were obtained from some 20 countries on a variety of subjects including heart diseases, diabetes, drug dependence and medical education.

The increasing demand for colour photographs necessitated the establishment of a new filing, duplicating and distribution system for colour slides. In order to meet the growing costs of this service, it was decided that from 1 October 1970 a charge would be made for the colour slides distributed.

A total of 346 radio recordings in 18 different languages was made in 1970 and 2250 tapes were distributed. The number of radio stations receiving WHO material for broadcasting was increased from 600 to 761.

Ten programmes were produced in the regular radio series "Around the World with WHO", which was started in 1969. Each programme usually

runs for 15 minutes and is at present produced in English, French and Spanish. Tapes of the programmes are distributed, on request, to 164 radio stations throughout the world. The North American Broadcasting Corporation redistributes the programmes to its affiliated stations in the United States of America. A special programme entitled "The Threat to the Environment" was produced on the occasion of the Twenty-third World Health Assembly. The English-language version was redistributed by the National Association of Educational Broadcasters to about a hundred affiliated stations in the United States of America. A special programme on medical education was related to the International Education Year and the technical discussions held during the Assembly.

The French version of a full-length documentary film on the condition of modern man, entitled "Voyage chez les vivants", was given its world première in Geneva in February. It was produced by Henry Brandt, in collaboration with WHO. WHO collaborated in another film, on diabetes, "Four in a Crowd"; it was sponsored by the Novo Foundation, produced by Laterna Film, Copenhagen, and will be used in connexion with World Health Day in 1971. The Organization produced a 10-minute film in co-operation with Animafilm, Bucharest, on the amphetamine problem. In response to the growing demand for material on cholera, a shortened version was produced of the half-hour educational film on that disease made for WHO some years ago.

Television teams from the Federal Republic of Germany, France, Italy, Netherlands, Switzerland, the United Kingdom, Yugoslavia and other countries were assisted with regard to film material on a variety of health topics. Two series of photographs for television were distributed to about 150 stations throughout the world.

CHAPTER 13

CONSTITUTIONAL, FINANCIAL AND ADMINISTRATIVE DEVELOPMENTS

Constitutional and Legal

No change occurred in the membership of the World Health Organization during 1970. A list of the Members and Associate Members is shown in Annex I to this Report. An application for membership of WHO by the German Democratic Republic was submitted to the Twenty-third World Health Assembly which decided (in resolution WHA23.11) to defer consideration of this matter until the Twenty-fourth World Health Assembly.

In 1970 Burundi, Central African Republic, Jamaica and Jordan deposited with the Secretary-General of the United Nations instruments of acceptance of the amendment to Article 7 of the Constitution which had been adopted by the Eighteenth World Health Assembly in 1965 (resolution WHA18.48). The total number of acceptances at the end of 1970 was 43.

Austria, Burundi, Cameroon, Central African Republic, Dahomey, France, Iraq, Israel, Jamaica, Jordan, Malawi, Monaco, Senegal, Sierra Leone and Spain deposited instruments of acceptance of the amendments to Articles 24 and 25 of the Constitution adopted by the Twentieth World Health Assembly

in 1967 (resolution WHA20.36) to increase from 24 to 30 the number of Members entitled to designate a person to serve on the Executive Board. By the end of 1970, 52 Member States had accepted these amendments.

The amendments to these Articles of the Constitution will enter into force after acceptance by two-thirds of the Members of the Organization in accordance with their respective constitutional processes.

On 19 May 1970 the Twenty-third World Health Assembly accepted amendments to paragraphs 1, 3 and 4 of Article VIII of the Statute of the International Agency for Research on Cancer relating to the new arrangements for the long-term financing of the Agency, as adopted by the Governing Council at its seventh session in 1969.

Mongolia and Romania acceded, with reservations, to the Convention on the Privileges and Immunities of the Specialized Agencies together with its Annex VII, which relates specifically to the World Health Organization.

The Financial Position

Budget for 1970

The Twenty-second World Health Assembly, in resolution WHA22.13, established an effective working budget for 1970 of US \$67 650 000. The total approved budget for the year was \$79 786 820. The difference of \$12 136 820 between the effective working budget and the approved budget is accounted for by a transfer of \$7 773 710 to the Tax Equalization Fund and an undistributed reserve of \$4 363 110 (equal to the net assessments on the Byelorussian SSR, China, South Africa and the Ukrainian SSR).

The distribution of the approved effective working budget among the appropriation sections is shown in Annex 13.

The effective working budget of \$67 650 000 for 1970 constituted an increase of \$5 528 300, or 8.90 per cent., over that for the previous year (\$62 121 700).

United Nations Development Programme

The year 1970 was the second year of operation under the new procedures governing the preparation, approval and implementation of projects financed from the Technical Assistance component of the United Nations Development Programme. During 1970 WHO was allocated a further amount of US \$6 663 327 for the years 1970-1974. This, together with previous allocations, resulted in a total applicable to these years of \$18 666 091, of which US \$7 527 492 were in respect of the 1970 approved programme. This latter sum includes US \$1 268 624 for administrative and operational services costs and US \$43 580 for contingency allocations for WHO-assisted projects. The corresponding sum allocated to WHO in respect of the 1969 approved programme was US \$7 369 857.

From the Special Fund component of the United Nations Development Programme, WHO was allocated an amount of \$5 459 990 which, together with an uncommitted balance of \$4 475 701 brought forward from 1969, gave a total of \$9 935 691 available for commitment.

Voluntary Fund for Health Promotion

Contributions in cash and in kind received in 1970 for the Voluntary Fund for Health Promotion amounted to US \$2 743 315, bringing the total of contributions credited to the Fund since its inception to \$37 897 763 as at 31 December 1970. These contributions related to the following sub-accounts:

	1.1.1970- 31.12.1970 US \$	Total from inception US \$
General Account for Undesignated Contributions	2 414	50 290
Malaria Eradication Special Account	52 977	21 045 947
Special Account for Smallpox Eradication.	337 820	1 969 095
Special Account for Medical Research	900 587	9 101 566
Special Account for Community Water Supply	8 380	1 030 211
Special Account for Assistance to the Democratic Republic of the Congo	1 170	342 680
Special Account for Accelerated Assistance to Newly Independent and Emerging States	5 452	110 071
Special Account for the Leprosy Programme	81 449	392 485
Special Account for the Yaws Programme	14 363	52 778
Special Account for the Cholera Programme	965 794	1 073 565
Special Account for Miscellaneous Designated Contributions	372 909	2 729 075

Working Capital Fund

The obligations incurred in 1970 and the status of collection of contributions and of advances to the Working Capital Fund at the end of 1970 are shown in the Financial Report,¹ which is published as a supplement to the Annual Report of the Director-General for submission with the Report of the External Auditor to the Twenty-fourth World Health Assembly.

The Twenty-third World Health Assembly (in resolution WHA23.8) took decisions that affected the amount

of the Working Capital Fund which at 1 January 1971 amounted to US \$11 014 000. Of this, \$5 014 000 was in Part I, Advances assessed on Members, and \$6 000 000 in Part II, Transfers of Casual Income. Of the surplus of \$1 136 560 in the Working Capital Fund at 1 January 1971 (being the difference between the amount of the Fund at 31 December 1969—\$12 150 560—and the revised amount of the Fund at 1 January 1971—\$11 014 000), \$1 128 414 was transferred to the Real Estate Fund in accordance with resolution WHA23.15 and the balance of \$8146 to the Assembly Suspense Account to remain at the disposal of the Health Assembly.

The Twenty-third World Health Assembly decided, also in resolution WHA23.8, that the Executive Board should review the Working Capital Fund at its first session in 1971 and submit a report to the Health Assembly.

Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training

The status of the Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training is shown in the Financial Report.¹ During 1970, 29 requests, amounting to US \$455 031, were received. The items supplied included cine-film projectors and audiovisual aids, surgical instruments and apparatus, radiological and other electro-medical equipment, glassware and spare parts.

Real Estate Fund

The Twenty-third World Health Assembly established the Real Estate Fund by resolution WHA23.14, at the same time disestablishing the Revolving Fund for Real Estate Operations and transferring its assets and liabilities to the new fund.

The Real Estate Fund will be credited with receipts of rental relating to real estate operations, interest earned on the investments of the Fund, and appropriations by the World Health Assembly from casual income.

The Fund may be used to meet the costs of maintenance, repair of and alteration to houses leased to staff by the Organization; major repairs of and alterations to the Organization's existing office buildings; the construction of buildings or extensions to existing buildings, and the acquisition of land which may be required.

¹ *Off. Rec. Wld Hlth Org.*, 191.

Administration

Structure and Staff

Extensive organizational changes were made at headquarters during 1970.

The Division of Biomedical Sciences was disestablished, two units formerly in this Division, Human Genetics and Human Reproduction, being grouped with the Maternal and Child Health unit to form a new Division of Family Health. The Biological Standardization unit was transferred to the Division of Pharmacology and Toxicology and the Immunology unit to the Division of Health Protection and Promotion. In the Division of Pharmacology and Toxicology, the unit of Drug Safety was renamed Drug Efficacy and Safety.

The Division of Public Health Services was renamed the Division of Organization of Health Services and the units of Public Health Administration, National Health Planning, and Organization of Medical Care were disestablished, their functions being combined in a new unit called Community Health Services.

A Pre-investment Planning unit was set up in the Division of Environmental Health to be responsible for all the Organization's pre-investment activities in water supply and wastes disposal carried out in co-operation with international and regional organizations and under bilateral arrangements.

The Division of Co-ordination and Evaluation and the Legal Office were attached directly to the Office of the Director-General. In the Division of Co-ordination and Evaluation, the unit of Research Co-ordination was disestablished. Those of its functions relating to the internal co-ordination of WHO research activities and to medical research grants were assumed by a new Office of Science and Technology, which took over, from the Division of Education and Training, responsibility for the processing and administration of research training grants and of grants for the exchange of research workers. The Director of the new Office became secretary of the Advisory Committee on Medical Research. A Headquarters Programme Review Committee was established by the Director-General to advise him on all aspects of the WHO programme; it is composed of the Assistant Directors-General responsible for the programme. Reporting functions were grouped in the Division of Co-ordination and Evaluation, which is responsible for the orderly and timely preparation of periodic reports, such as the Report on the World Health Situation and its supplements, and of reports relating to WHO participation in socio-economic development pro-

grammes undertaken jointly with the United Nations and other organizations of the United Nations system.

The Division of Editorial and Reference Services was also disestablished. The functions of the two units hitherto known as Official Records and Technical Publications were assumed by a new unit, Editorial Services, which together with the Translation unit constitute the Office of Publications and Translation. To this Office were attached the services responsible for terminology, for the distribution and sale of WHO publications, for documents processing and for graphics. The Health Legislation unit became part of the Division of Organization of Health Services, and Library and Reference Services, renamed Library and Documentation Services, part of the Division of Education and Training. Of the remaining activities of the former Division of Editorial and Reference Services, those concerned with copy preparation and with contracts and arrangements for printing were transferred to Supply Services, and the fulfilling of orders for publications and their invoicing to Finance and Accounts.

In the Division of Education and Training, only Staff Training and Library and Documentation Services were retained as separate units. The other units previously forming part of this Division were disestablished as such, and the medical officers responsible for fellowships, undergraduate and post-graduate education, training of auxiliary personnel, teaching equipment and aids, education in family health and educational planning now form a single team under the Director of the Division.

These changes were accompanied by a redistribution of divisional responsibilities among the technical Assistant Directors-General. The structure of the Organization as at 31 December 1970 is shown in Annex 16.

On 30 November 1970, the total staff (excluding staff of the Pan American Health Organization but including 9 WHO agents on duty in the Democratic Republic of the Congo) was 3710, as compared with 3564 on 30 November 1969, an increase of 4.09 per cent.

Details of the numbers and distribution of the staff and of its composition by nationality on 30 November 1970 are given in Annexes 14 and 15. The latter shows that at that date the number of Members whose nationals were employed by the Organization in posts subject to geographical distribution was 96.

In addition to the arrangements for individual staff members to take study leave and refresher training, several group courses were organized in 1970. In July, a course for senior public health administrators took place in Geneva and was attended by eight headquarters staff and eight staff from the regional offices. A computer orientation course was given in December for 21 medical officers assigned to headquarters, and a course on electronic data-processing in health services was organized, also in Geneva, for 16 staff members stationed in nine countries of the Eastern Mediterranean Region. Eight staff members at headquarters also attended a one-week course in Geneva on computer concepts for executives.

A seminar on administrative procedures and scientific management was held for groups of supervisors in the general service category at headquarters. The seminar lasted seven half-days.

The language laboratory continued to provide audiovisual tuition in four languages; 372 staff members attended courses during the year.

Supply Services

Supplies and equipment purchased at headquarters during 1970 amounted to 37 937 line items with a total value of US \$7 801 000. This figure includes \$1 702 000 for reimbursable purchases made for 14 countries and for the United Nations and specialized agencies, UNICEF, the International Agency for Research on Cancer, and governmental and non-governmental organizations in official relations with WHO. Of this total, \$369 000 was for purchases made out of the Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training. Purchases from research grants awarded to individual investigators or institutions amounted to \$337 000.

General purpose X-ray diagnostic units operating under field conditions in several countries of Africa, Asia, Europe and the Middle East underwent their final inspection. An assessment of their performance will serve as a basis for the preparation of a general specification for this type of unit.

Emergency Supplies

In relation to several national disasters which occurred during the year, the Organization maintained liaison with the League of Red Cross Societies in order to avoid duplication in meeting requests for assistance in the form of supplies and equipment. Technical advice was provided to the League in

identifying medical items included in appeals from national societies and in recommending appropriate quantities and priorities, as well as sources of supply. The Organization provided field laboratories for water testing, water purification supplies and measles vaccine to Turkey after the earthquake, and similar water-testing laboratories and supplies, spraying equipment and calcium hypochlorite to Romania in the emergency caused by floods. After the Pakistan cyclone disaster, infusion fluids, disposable syringes, tetracycline, bleaching powder and snake antivenin were supplied by WHO, while the purchase of additional infusion fluids, bleaching powder, tetanus antitoxin and other biological preparations, and water purification tablets was negotiated by the Organization but paid for and shipped by various national Red Cross societies. An urgent appeal from Cambodia for blood-typing sera was also met. For emergency assistance after the earthquake in Peru, see page 129.

Continuing its assistance to the countries of West Africa in the outbreaks of yellow fever there, the Organization supplied 750 000 doses of vaccine to Ghana, Ivory Coast, Mali, Nigeria, Togo and Upper Volta. Emergency purchases were made of poliomyelitis vaccine to combat outbreaks in Mali, the People's Republic of the Congo and Saudi Arabia. Anti-rabies vaccine was dispatched to counter an outbreak of the disease in Nigeria.

Outbreaks of cholera in several countries where cholera has not normally been prevalent occasioned a substantial number of emergency purchases and urgent appeals for donations of cholera vaccine. From August onwards (see page 6), the Organization made available emergency supplies of cholera vaccine, rehydration fluids, tetracycline, diagnostic media and sera, jet injectors, syringes, needles and other items to 54 countries and territories of Africa and Asia, for precautionary measures or for combating the disease. By the end of November, these supplies of vaccine had reached a total of some 36 million doses, purchased from WHO funds and from contributions to the Voluntary Fund for Health Promotion.

Co-ordination in Administrative, Budgetary and Financial Matters within the United Nations System of Organizations

The continuous development of the process of co-ordination within the United Nations system of organizations, as analysed in the organizational study by the Executive Board (see page 101), also introduced new tasks in the co-ordination of administrative, budgetary and financial matters.

Two reports on compatible programme and budget presentation of the organizations in the United Nations system were considered during the year: the report on "Budget presentation in the United Nations system" prepared by a consultant for the United Nations Advisory Committee on Administrative and Budgetary Questions, and the Joint Inspection Unit's report entitled: "Programming and budgets in the United Nations family of organizations." A revised set of programme headings was adopted together with detailed sub-headings, designed to reflect as closely as possible the programmes actually carried out by the organizations. The classifications will be used by the Administrative Committee on Co-ordination in its 1971 report to the Economic and Social Council on expenditures in the United Nations system in relation to programmes.

The standardization of financial and budgetary nomenclature undertaken at the recommendation of the *Ad Hoc* Committee of Experts to Examine the Finances of the United Nations and the Specialized Agencies continued, with the translation into Russian and Spanish of the 83 terms agreed upon in English and French by the end of 1969. The organizations reviewed these terms, which were published in July as a four-language glossary.

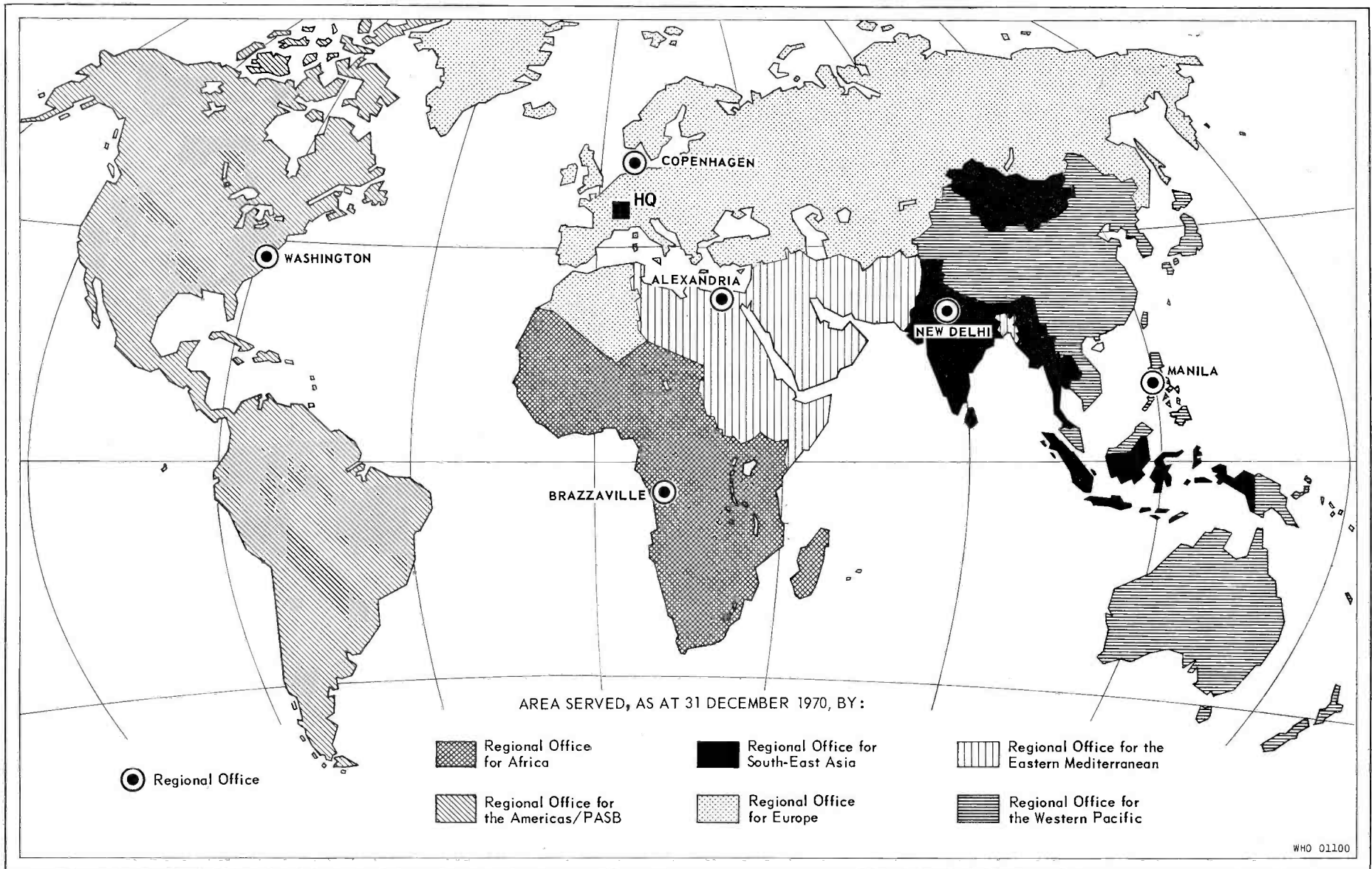
A number of reports were submitted to the United Nations, upon request. They included reports on the implementation of the recommendations of the *Ad Hoc* Committee of Experts, on the bodies and organs established for purposes of administrative and budgetary control, investigation and co-ordination, and on the increases in the level of expenditure under the regular budget of the United Nations and the specialized agencies since their inception.

Nine reports and addenda received from the Joint Inspection Unit were considered by the Executive Board at its forty-fifth and forty-sixth sessions (in January and May 1970), together with the Director-General's comments. All these reports concerned more than one organization in the United Nations system. The Director-General's comments and the decisions of the Executive Board were transmitted to the Economic and Social Council, the Chairman of the Joint Inspection Unit and the External Auditor. Also at its forty-fifth session, the Executive Board accepted the revised procedures for transmitting and handling reports of the Joint Inspection Unit, recommended by the joint meeting of the Administrative Committee on Co-ordination and the Committee for Programme and Co-ordination and endorsed by the Economic and Social Council.

PART II

THE REGIONS

WHO REGIONAL OFFICES AND THE AREAS THEY SERVE



CHAPTER 14

AFRICAN REGION

The integration of independent communicable disease control activities into the overall programme of the basic health services, the reinforcement of epidemiological surveillance and the co-ordination of disease control programmes were among the principal goals of the Organization's work in the African Region in 1970.

The effort at integration has in no way excluded the development of specific disease control activities although certain preliminary conditions must be fulfilled if these are to be fully effective. Programmes to control certain diseases, such as tuberculosis and malaria, have already been integrated into the basic health services in many countries. Malaria is one component of projects in Cameroon, Comoro Archipelago, the Democratic Republic of the Congo, Guinea, Liberia, Nigeria, Senegal, Togo and Zambia; and tuberculosis has been made one component of epidemiological services projects in Nigeria, Togo, Uganda and the United Republic of Tanzania as an intermediate step to integration into the basic health services.

Care has been taken to promote the multidisciplinary approach to country programmes that has proved necessary in order to develop epidemiological services, including laboratory and health statistics services, and to meet emergency requirements in the case of epidemics.

Communicable Diseases

A meeting was held at the Regional Office in March to study the best ways of strengthening epidemiological surveillance and improving the co-ordination of programmes for the control of communicable diseases in Africa. It was attended by representatives of the United States Public Health Service, the Organization for Co-ordination and Co-operation in the Control of Major Endemic Diseases (OCCGE), the Organization for Co-ordination in the Control of Endemic Diseases in Central Africa (OCEAC), the Organization of African Unity (OAU) and the East African Medical Research Council. The meeting recognized that WHO possessed an administrative and technical framework within which the co-ordination of communicable disease control activities could suitably be organized. Recommendations were made with regard to increases in the exchange and dissemination of technical

information, in the use of research grants and in the number of short-term assignments of specialized staff to the laboratories of the Region, the establishment of a regional programme for exchange of research workers, and the further development of the two epidemiological surveillance centres at Nairobi and Abidjan.

The risk of recrudescence of yaws calls for greater vigilance to ensure maintenance of the results already obtained after several years of mass penicillin campaigns carried out with the assistance of UNICEF. A technical agreement has been reached with OCCGE concerning the control of the disease and it has been possible to assist Upper Volta with regard to control measures. An epidemiological survey in the Senegal river basin was begun following requests by Mali, Mauritania and Senegal.

The three principles of priority action in the regional tuberculosis programme are BCG vaccination, case detection through bacteriological diagnosis, and ambulatory treatment. When applied to field projects in African countries, these activities tend increasingly to be integrated in basic health services. At least 11 projects in the Region are operating on these lines, using simple methods that can be applied by the staff of peripheral health posts. From the administrative point of view, tuberculosis projects are included in projects for basic health services or for epidemiological services, while the training of various categories of staff is carried out in common in demonstration zones.

UNICEF continued to provide vaccine for WHO-assisted BCG vaccination campaigns in Ghana, Kenya, Mali, Niger, Rwanda, Swaziland and Upper Volta. During the year Malawi and the United Republic of Tanzania asked for BCG vaccination to be included in the activities of their national smallpox eradication campaigns.

Consultative services on leprosy were provided to Burundi, Rwanda and Zambia, and a project is being set up to provide similar services for western and central Africa. A seminar convened in Kampala, and attended by national leprosy control workers (see page 185), provided an opportunity to discuss programme techniques and review the development of the situation since the last seminar, held in 1960.

Cerebrospinal meningitis made its appearance during the year in severe epidemic form in Niger and in rather

less severe form in Mali, Nigeria and Upper Volta. Requests for assistance were met to the extent possible. Trials of a polysaccharide vaccine were initiated in Mali and Upper Volta.

Cholera suddenly broke out in Guinea in August, with some 2000 cases and 60 deaths, according to the latest information available. Cases were subsequently reported from Dahomey, Ghana, the Ivory Coast, Liberia, Mali, Niger, Nigeria, Sierra Leone, Togo and Upper Volta. Prompt assistance in the form of advisory services, vaccine, diagnostic materials, drugs and rehydration fluid was provided both to the affected countries and neighbouring states at risk. In view of difficulties of controlling the disease in tropical areas, a close watch is being maintained on the situation.

Two courses, one in Ibadan, Nigeria, and the other in Bobo-Dioulasso, Upper Volta, were held with the objective of providing participants, who came from almost all countries of the Region, with the latest information on methods of treatment of the disease, its epidemiology, clinical features, laboratory diagnostic procedures and effective surveillance techniques.

Plague cases continued to occur and at times the disease spread beyond the residual foci, particularly in eastern and southern Africa. One outbreak was reported in the Democratic Republic of the Congo, where a national plague team was organized with staff trained with WHO assistance. Kenya, Lesotho, Madagascar, Uganda and the United Republic of Tanzania are also at permanent risk of a resurgence of the disease in man, owing to the persistence of sylvatic rodent foci.

In the smallpox eradication programme, WHO continued to contribute to local costs in 13 countries, and assistance in the form of staff, equipment and local costs was provided for the programmes in Burundi, the Democratic Republic of the Congo, Kenya, Malawi, Mauritania, Rwanda, the United Republic of Tanzania, and Zambia. An account of the project in Zambia will be found on page 124. The United States Agency for International Development (AID) provided substantial assistance to eradication programmes in 20 countries in western and central Africa. All but nine countries in the Region reported no cases for 1970. The total reported for the African Region was fewer than 1500 cases, only one-tenth of that reported in 1967 when the eradication programme was launched. At the Kindia Institute in Guinea the production of freeze-dried smallpox vaccine, begun in December 1969, is increasing rapidly. So far, 113 450 doses have been produced and all batches have satisfactorily passed laboratory tests.

The 1969 epidemic of yellow fever in West Africa led the Twenty-third World Health Assembly to adopt a resolution calling for international co-operation and

assistance to African countries. One result has been a contribution of 200 000 doses of vaccine from the Government of Brazil. A regional epidemiological surveillance centre for western and central Africa has been established at Abidjan, and will assume responsibility, *inter alia*, for implementing the Assembly's recommendations. A stock of two million doses of 17D yellow fever vaccine is kept ready for emergency distribution. A mosquito vector survey was carried out in Ghana, and the Organization gave advice with regard to similar surveys undertaken in Cameroon and Senegal.

Trachoma is known to be prevalent throughout most of the Region, and particularly in eastern Africa. Two of the main factors in the endemicity of the disease are the socio-economic status of the population and the physical nature of the environment. In the United Republic of Tanzania a survey of 16 000 inhabitants in the Dodoma district revealed that 65 per cent. suffer from ocular conditions, of which 90 per cent. were caused by trachoma. Massive treatment with antibiotics combined with a simultaneous programme of health education have significantly reduced the severity of the disease. In a study carried out in the Ipalá-Mombolo area it was found that conjunctivitis accounted for 9 per cent. and the active form of trachoma for 40 per cent. of all cases of communicable eye disease.

In conformity with resolution WHA22.39 of the Twenty-second World Health Assembly, malaria eradication strategy has been revised having regard to the epidemiology of the disease and socio-economic conditions in individual countries. Antimalaria activities have been directed to reducing morbidity and mortality by providing populations with chloroquine treatment. This strategy has been applied with particular vigour in Cameroon, Liberia, Nigeria, Senegal and Togo.

In the project for operational research on human and animal trypanosomiasis eradication in Kenya, trial aerial applications of a dieldrin invert (water-in-oil) emulsion proved effective in destroying *Glossina* flies in the treated area. The insecticide was shown to have a residual effect for eight weeks. Reviews of the local situation were carried out in Gabon, Rwanda and the United Republic of Tanzania.

As a consequence of the considerable increase in irrigation and hydro-electric development projects, there is a tendency for the snail carriers of schistosomiasis to proliferate and spread the disease more widely. The application of certain of the newer molluscicides combined with mass chemotherapy seems to offer improved prospects for its control. Pilot control projects continued in Ghana and the

United Republic of Tanzania, and in the latter country more than 900 patients were treated with niridazole (see page 125).

Onchocerciasis affects more than 20 million people in Africa. Within the framework of a WHO inter-country project providing consultative services on onchocerciasis, DDT and the more biodegradable insecticide methoxychlor were applied from the air with encouraging results in the control of *Simulium* larvae. Following the completion of the preparatory phase of the control programme in Guinea, during which baseline epidemiological and entomological data were collected, conventional application of DDT is now being undertaken (see also page 34).

The Organization was engaged on research projects in connexion with the health problems posed by two man-made lakes, the Volta Lake in Ghana and the Kainji Lake in Nigeria. Both these projects are financed from the Special Fund component of the United Nations Development Programme, with FAO as executing agency and WHO as participating agency. Epidemiological surveys were begun to assess the health hazards confronting the populations in the new settlements, and especially the danger of the introduction of schistosomiasis, onchocerciasis, malaria and trypanosomiasis.

Environmental Health

Assistance in improving community water supply and waste disposal arrangements was given to Botswana, the Democratic Republic of the Congo, Dahomey, Gabon, Ghana, Kenya, Liberia, Madagascar, Mauritania, Niger, Sierra Leone and the United Republic of Tanzania.

With the initiation of a study of water supply and sewerage for Abidjan, Ivory Coast, the number of such projects financed from the Special Fund component of the United Nations Development Programme in the African Region rose to six. Phase II of the Accra-Tema water supply and sewerage project in Ghana was completed, and supplemental assistance was provided to strengthen the Ghana Water and Sewerage Corporation. In Uganda, work is expected to begin shortly on the construction of water supply and sewerage facilities for Kampala and Jinja (see page 126). Field work carried out during the year in the sanitation and drainage project in Bangui, Central African Republic, included the construction of several large storm-water drains; training was given to national public works and public health staff. Master plan studies were completed for sewerage, drainage and solid waste disposal works at Ibadan, Nigeria, and a programme was initiated to meet immediate sanitary needs through the construction of a number of buildings in the city, each equipped with latrines,

showers, and clothes-washing facilities. The population served by these stations is participating in their construction on a self-help basis. In Dakar, Senegal, work was completed in September on a wide-ranging sociological survey of a large cross-section of the population. The results, after being processed by computer, enabled more precise criteria to be established for the long-term planning of water supplies and sewerage in the area covered. In August the programme of drilling and test pumping in connexion with groundwater studies for the Dakar project was initiated.

Pre-project allocations from the Special Fund component of UNDP were approved for a rural water supply project in Ghana, and the Inter-Agency Consultative Board advised that Special Fund support be given for a water supply and sewerage project at Nairobi, Kenya.

A study of water supply and sewerage on a national basis in Kenya was undertaken by WHO with financial assistance from the Swedish International Development Authority.

The University of Mauritius and Lovanium University (Democratic Republic of the Congo) were helped in establishing training programmes in public health engineering.

Organization of Health Services

In Gabon, Liberia, Mali, Niger and Sierra Leone, five countries that had previously received technical advice from WHO and financial assistance from the United States Agency for International Development (AID) in drawing up national health plans, a review was made during the year of progress in implementing the plans, and the staff requirements for health planning work were assessed.

A workshop on national health planning was held in Brazzaville in June with the aim of assisting countries in the formulation and implementation of health plans. Participants from 10 countries in the Region studied the various stages of planning and the application of planning principles in Africa and discussed the problems of training health planning personnel. A four-week intensive course for health administrators on the organization and administration of health services was organized by WHO in October at the Institute for Economic Development and Planning at Dakar.

A questionnaire relating to health planning activities was sent to 34 countries of the Region during the year. Of the 19 countries replying, 17 had implemented national health plans. All except six reported that they had integrated their health plans with their socio-economic development plans, but none made any secret of the difficulties encountered in harmonizing the social and economic objectives. Most of the countries had prepared their plans according to the empirical

“project-by-project” method. Three had used the planning-programming-budgeting system, and one the “rolling plan” method. In general, the objectives of these plans were in line with those established by the Organization.

In the project for the development of basic health services in Dahomey, services were reorganized at the central level and personnel were recruited and trained for a demonstration zone where training and operational research will be carried out. A maternal and child health programme was developed, malaria surveys were conducted and programmes for chemoprophylaxis and treatment of malaria patients were enlarged.

WHO assisted the Ivory Coast, Kenya, Liberia, Nigeria, Sierra Leone and the United Republic of Tanzania in setting up and developing vital and health statistical services as well as epidemiological services and research. Advice on the establishment of health statistical services was provided for Chad and Mauritania.

The Organization once again assisted the Statistical Training Centre in Yaoundé and the East African Statistical Training Centre in Dar es Salaam with their courses for intermediate-level personnel.

WHO was represented at the world population census conference of the Customs and Economic Union of Central Africa (UDEAC), which was held in Bangui in July.

The Organization assisted a health education training course in Ghana on the same lines as the training seminar held there in 1969. The health education component in the training courses for health service personnel at Lomé and Lagos was strengthened. Assistance was given to Guinea in formulating plans for the development of a health education service, and the project for health education in Nigerian schools made further progress.

The post-basic nursing education projects in Dakar and Nairobi graduated their first classes during the year. To date the four post-basic nursing education projects in the Region have prepared a total of 120 qualified tutors for service in nursing schools. Basic nursing education projects were started in Mauritius, Swaziland and the United Republic of Tanzania.

Directors and teachers of nursing schools in the Region met in Brazzaville in July to consider what means they could recommend to their governments for making nursing training programmes more effective and better adapted to national needs and resources. The future tasks of nurses were discussed in relation to the development of public health needs and services, and practical measures were considered for the wider dissemination of knowledge on educational methodology through planned workshops, the development of

research in nursing and a regular exchange of experience among nursing schools.

The subject of public health nursing is increasingly being included in basic and post-basic nursing education programmes. Ghana is requiring that nurses should have this training in order to qualify for state registration, and Kenya has plans to start the first specialized course in public health nursing in East Africa.

Health Protection and Promotion

Maternal and child health activities are effectively being integrated in basic health services in Burundi, Chad, the Democratic Republic of the Congo, Dahomey, Gabon (see page 73), Kenya, Liberia, Mauritania, Niger, Rwanda, Sierra Leone and Upper Volta. In Dahomey, a maternal and child health centre has been set up near Porto Novo as part of a joint project of FAO and the Horticultural and Nutritional Education Centre. A qualified paediatric nurse is in charge of the project and is assisted by a state registered nurse.

One result of the introduction of health education as an integral part of maternal and child health activities has been to improve the vaccination coverage of babies and pre-school children brought for consultations.

The project for the development of basic health services in Dahomey has worked out a new system of record cards for use in maternal and child health centres. This has proved to be easily operated by all paramedical staff working in the centres and even by the auxiliary staff who can thus follow the mother's health progress and study the health and nutritional status of the children.

In Niger, the health authorities and those responsible for social affairs have co-operated in setting up in Niamey joint centres concerned with both maternal and child health and social work. School health work has been begun by a social welfare worker who had undergone a refresher course. In the Ivory Coast, the capital of each department now has a maternal and child health centre directed by a physician (see page 125).

WHO collaborated with the International Children's Centre in organizing a seminar on the application of epidemiology to the health problems of children, held in Abidjan in October.

Studies and investigations in nutrition have been undertaken with WHO assistance in the Democratic Republic of the Congo, the Ivory Coast, Malawi, Senegal, the United Republic of Tanzania and Zambia. Consultative services for nutrition surveys were provided for the Central African Republic, Gabon and Kenya.

District and provincial nutrition officers have been trained in Kenya and the United Republic of Tanzania, and specialists in food science and applied nutrition have followed a course leading to a certificate in Ibadan, Nigeria, and in Haifa, Israel. Training for dietitians from Cameroon and the People's Republic of the Congo was arranged in France, in Paris and Marseilles respectively.

Both nutritional education and health education were integrated in the maternal and child health activities of the basic health services in Burundi, Cameroon, the Democratic Republic of the Congo, Gabon, Ivory Coast, Malawi, the People's Republic of the Congo, Senegal and the United Republic of Tanzania.

Nutritional rehabilitation centres in Burundi, Uganda and the United Republic of Tanzania were given assistance, and new centres were set up in the Ivory Coast and in Zambia.

Studies on protein-rich and vitamin-rich foods continued in Kenya, Senegal and the United Republic of Tanzania with WHO assistance, and new studies were undertaken in collaboration with FAO in Madagascar. Plans for similar studies in Cameroon have been drawn up. In these studies mixtures of maize, soya bean, rice, milk, etc. were tried out. WHO has also assisted in planning acceptability trials.

Kenya has continued the control of endemic goitre using iodized salt, and Cameroon is planning similar action. To assist the United Republic of Tanzania with a study on the defluoridation of water supplies, the Organization gave advice on biochemical laboratory methods applicable to nutrition problems.

WHO continued to co-ordinate its nutrition policies with those of FAO, UNESCO, UNIDO, the World Food Programme and other United Nations bodies, and strengthened its co-operation with them in field activities. It collaborated in more than 80 projects of the World Food Programme. In Zambia WHO and FAO are assisting the National Food and Nutrition Commission in a project for the improvement of nutrition through better food consumption patterns. This is the first nutrition project to be financed from the Special Fund component of the United Nations Development Programme.

Education and Training

As requested by the Regional Committee for Africa at its nineteenth session, in 1969, efforts have continued in order to find long-term solutions for the difficulties faced by countries of the African Region in attempting to train their own health personnel and to ensure that the teaching staffs, material and premises meet requirements both in quality and in quantity.

Steps have been taken to make training in pedagogy

available to all those who are responsible for the education of medical and health personnel. The development within the next few years of regional centres for the training of teaching staff is envisaged. In the meantime workshops on teaching methods in medical education continue to be organized. The second of these was held in Kampala in October.

The programme of staff exchanges between medical schools continued to arouse interest among members of teaching staffs. Nine medical faculties from the African Region and one from the Eastern Mediterranean Region arranged such exchanges for a total of 200 days. Assistance in developing staff training centres for members of the health team was given to Cameroon, the Democratic Republic of the Congo, Gabon, Guinea, Nigeria, Sierra Leone and Uganda. WHO has provided 10 teachers for five of these training centres.

Co-operation with other Organizations

The Organization collaborated with the Economic Commission for Africa in a large number of training courses, seminars and working groups.

In addition to the joint activities with the United Nations Development Programme mentioned in previous paragraphs, WHO has provided technical collaboration in preparatory missions to study health aspects of the Kossou Dam project in the Ivory Coast and of a development project in the Niger basin, and has participated in pre-investment studies in Swaziland.

In collaboration with the International Bank for Reconstruction and Development, WHO participated in a preliminary mission to study water supplies in Mali and in sector studies and pre-investment missions to Kenya, Uganda and the United Republic of Tanzania.

Consultations with UNICEF were maintained both in studying programme previews and in the formulation of recommendations for assistance to the countries of the Region. Co-operation with FAO has continued in a number of projects assisted by the Special Fund component of the United Nations Development Programme.

In the field of communicable disease control, close co-operation was maintained with the United States Agency for International Development, the Organization for Co-ordination and Co-operation in the Control of Major Endemic Diseases, the Organization for Co-ordination in the Control of Endemic Diseases in Central Africa, and the East African Medical Research Council of the East African Community. The Organization of African Unity increased its participation at both technical and organizational meetings of WHO in the Region. Joint activities with the African Development Bank were undertaken with respect to a drainage project in Burundi.

Administrative and Organizational Developments

In 1970 the organizational structure of the Regional Office was revised and three units—organization of health services, family health, and epidemiological surveillance and control of communicable diseases—were established under the Director of Health Services.

Regional Committee

The twentieth session of the Regional Committee for Africa was held in Accra, Ghana, from 9 to 15 September 1970. The session was attended by representatives of 28 Member States (including those of France attending on behalf of certain territories in the Region) and observers from Gambia and Swaziland. UNICEF, UNDP, the Office of the High Commissioner for Refugees, and FAO were represented, as were the Organization of African Unity, the International Committee of Military Medicine and Pharmacy, the Organization for Co-ordination in the Control of Endemic Diseases in Central Africa, the Organization for Co-ordination and Co-operation in the Control of Major Endemic Diseases, and seven non-governmental and other interested organizations. The Deputy Director-General attended the session.

In its discussion of the annual report of the Regional Director for the period 1 July 1969 to 30 June 1970, the Committee noted the progressive adaptation of WHO activities in the Region to the social and economic conditions of the countries concerned. It approved the principle of integrating into the basic health services a certain number of activities, such as sanitation, malaria control, tuberculosis control and maternal and child health, which had previously been conducted independently. The integrated services should be supported by health education and an effective network of epidemiological, statistical and public health laboratory services, operated by qualified personnel, and functioning in the framework of a realistic long-term health plan.

The Committee noted that yellow fever had reappeared in certain countries of the Region, and that two new diseases had been added to the already heavy burden carried by public health services. The "Lassa virus" had caused deaths in certain states of Nigeria, while cholera had made its first appearance this century in Africa south of the Sahara and was causing great anxiety to health authorities. In this connexion the Committee expressed satisfaction at the rapidity and effectiveness of the action taken.

The Committee expressed the hope that emergency

teams be set up and supplied with the equipment and facilities required for providing emergency assistance to any country threatened with serious epidemic outbreaks.

The programme and budget proposals for the African Region in 1972 were discussed and approved for transmission to the Director-General. The Committee expressed anxiety concerning the continuing reduction in the credits allotted to health activities from the United Nations Development Programme.

The Committee approved the report submitted to it with regard to the fifth general programme of work, for the period 1973-1977, and confirmed the following priorities for WHO's action in the African Region: education and training, national health planning, the development of integrated health services, the control of communicable diseases, and environmental health in the widest sense of that term.

The Committee noted with satisfaction resolution WHA23.16 adopted by the Twenty-third World Health Assembly with regard to additional housing for the staff of the Regional Office for Africa and extension of the Regional Office building.

The Committee also expressed the wish that the example given by the representatives and other participants who had abstained from smoking during meetings at the Committee's twentieth session would be followed by those attending future sessions of the Regional Committee and other WHO meetings in the Region.

The Committee noted the publication of the first two issues of *AFRO Technical Papers*, entitled *Towards a Philosophy of Health Work in the African Region* and *An Integrated Concept of the Public Health Services in the African Region*.

The subject of the technical discussions was "Basis and methods of evaluation of national public health programmes". The Committee confirmed the decision taken at its nineteenth session that the subject for the technical discussions in 1971 should be "The place of public health education in programmes for the training of health-team personnel" and selected "Environmental health activities in the context of an integrated concept of public health services" as the subject for the discussions in 1972.

The Committee also confirmed its previous decision that its twenty-first session would be held at the Regional Office, and accepted the invitation of the Government of Guinea to hold its twenty-second session in Conakry.

Some Aspects of Work in the Region

A list of the projects current during the year will be found in Part III. The following have been selected for fuller description.

Smallpox Eradication, Zambia

In spite of control measures over a number of years, there were 1881 cases of smallpox in Zambia in 1963

and 2214 cases in 1964 in a population of 4 million. It was accordingly decided to undertake a national smallpox programme with the aim of eradicating the disease. Freeze-dried vaccine was supplied by the Government of the Union of Soviet Socialist Republics and through the WHO Special Account for Smallpox Eradication. From 1967 onwards, WHO provided staff (one doctor and three technicians), transport material and vaccination equipment.

The campaign was organized within the framework of the existing health administration, the government epidemiologist in the health services development division being responsible for planning, general policy and the collection of data. The implementation of the programme was entrusted to the provincial authorities, and a third of the population in each of the eight provinces was vaccinated each year.

An epidemiological surveillance service was organized at the outset of the attack phase, cases being verified both by direct medical examination and by laboratory diagnosis. The first phase of the campaign lasted from 1966 to 1968. It was followed by a survey of vaccination scars in representative samples of the population to provide the data needed for planning the second round of vaccinations. The statistical studies were carried out by the Epidemiological Centre, Nairobi, and the field work by students at the Lusaka Medical School. The average vaccination coverage is 76.4 per cent. Although this coverage is not ideal, the incidence of smallpox in Zambia has diminished year by year, becoming nil in 1969. Owing to the existence of endemic smallpox zones in neighbouring countries, however, two imported cases were recorded in 1970.

WHO will assist in the next stage of the programme, in which the necessary maintenance vaccinations, including the vaccination of newborn infants, will be carried out partly by mobile teams and partly at the regular health centres. Measures to improve the reporting network and smallpox surveillance activities will be continued.

Schistosomiasis Control, United Republic of Tanzania

The WHO-assisted schistosomiasis project in the United Republic of Tanzania was undertaken following intensive research on various aspects of the disease by the East African Institute for Medical Research in Mwanza, in order to ascertain whether, with the money and manpower available and with the co-operation of intergovernmental agencies, the control of schistosomiasis in Tanzania would be a practical proposition. It is hoped that, if operations in the project areas are successful, the methods developed may be applied on a larger scale in other parts of the country and, with suitable modifications, elsewhere in East Africa.

Following the signing of a plan of operation, a WHO adviser was assigned to the project in April 1967 and a WHO technical officer in August 1970. The Organization also provided expert assistance for trials of various control methods, notably chemotherapy and the use of molluscicides.

The project operates in two areas: Misungwi (rural) and Mwanza (urban). It involves the collection of data on the mechanism and dynamics of schistosomiasis transmission, mass chemotherapy, the application of molluscicides, cost-effectiveness evaluations of different control measures and the in-service training of auxiliary staff.

The first phase of the project was completed in March 1970. It included the collection and analysis of population statistics and of data on the prevalence of the disease and on egg-output patterns. The preliminary control trials were completed and about 500 snail habitats selected for treatment. The two project areas, which together cover about 100 square kilometres and have a population of some 4000, were divided into three sectors: one in which molluscicides alone would be used, one where both molluscicides and chemotherapy would be used, and a control sector. The plan for a mass chemotherapy campaign in the rural area was prepared and a working committee set up to propose specific control measures for the urban area.

The second phase began in April, and the first cycle of molluscicide application, when a total of 421 snail habitats were treated with niclosamide, was completed by June. Checks made immediately afterwards revealed no living snails in these habitats, but from experience it was expected that the snail population in some of them would have built up again several months later. In the rural area, after the first blanket application all mollusciciding cycles will be conducted on a selective basis.

In July, mass chemotherapy was started in the rural area, 933 patients being treated with niridazole. In an attempt to obtain better coverage and interrupt transmission of the disease, further mass treatment will be carried out. Plans to evaluate progress in the chemotherapy campaign include the measurement of schistosomiasis incidence in children aged 2-9 years who were uninfected at the outset of operations.

The shortage of national staff has been a problem during the project, but this has now been solved by the secondment of two health officers and a laboratory auxiliary from the Ministry of Health.

Maternal and Child Health, Ivory Coast

A project for the development of maternal and child health activities in the Ivory Coast was started in 1964 with assistance from WHO and UNICEF. It was agreed at the outset that the Ministry of Health and

the Ministry of Social Welfare would apply the same principles throughout the country in their maternal and child health work. Training—in particular the reorientation of auxiliary and other health personnel—forms an important part of the project.

It was decided to use the area served by the maternal and child health centre at Cocody-Sud, Abidjan, as a demonstration and training area. Training is also provided by the centre at Treichville, Abidjan. As co-ordination between the social welfare and health authorities developed, the project was extended to the rural areas. BCG vaccination was introduced in all the rural health services and, following studies of the various regions of the country, a network of maternal and child health centres was planned.

As a result, the capital of each department now has a maternal and child health centre directed by a physician. One of the first tasks of the doctors in these centres was to establish contact with the staff of the rural medical posts and help them to organize their maternal and child health work.

A special effort was made to establish an immunization programme, priority being given to diphtheria-pertussis-tetanus and poliomyelitis vaccination. Prophylactic measures against malaria are also a prominent feature of the project, and BCG vaccination of the newborn is becoming standard practice in maternity homes.

The training of auxiliary and other health personnel has been extended to Adjamé and to Bingerville-Bagba, where the children's dispensary has been converted into a training centre. In addition, a number of volunteer nurses are taking part in maternal and child health work, particularly in the country-wide immunization programme.

Master Plans for Water Supply and Sewerage for Kampala and Jinja, Uganda

In 1965, the Government of Uganda submitted a request—prepared with the help of WHO—for assistance from the Special Fund component of the United

Nations Development Programme in preparing master plans for the development of water supply and sewerage facilities in Kampala and Jinja. This request was approved in 1967, WHO being designated as executing agency. A private firm was appointed to carry out engineering studies and deal with related financial, economic and legal aspects, under the direction of the WHO sanitary engineer/project manager and assisted by a WHO expert on organization and management. The project started towards the end of 1968.

The master plans propose a phased investment and construction programme, including a plan to meet immediate needs and a long-term plan for the period up to the year 2000. The report on immediate needs has been completed and contains a detailed description of the existing facilities, with proposals for extensions to meet requirements over a five-year period in both Kampala and Jinja. The necessary preliminary studies to ensure the proper management and operation of the water supply and sewerage services have been made, and national staff have been trained both on the job and through fellowships, of which 10 have been awarded so far.

Studies have been carried out on the detection and prevention of leakages in the water distribution system, the assimilative capacity of Lake Victoria, the design of water supply networks, the local manufacture of materials for the project, groundwater and soil, water treatment processes and waste stabilization ponds.

As a result of the "immediate" programme, it is expected that an additional 70 000 people in Kampala and 60 000 people in Jinja will be supplied with water, through house connexions or standpipes, within the next five years. The capital cost of this part of the programme is estimated at about US \$2.2 million for Kampala and a little over \$1 million for Jinja. Better sewerage facilities for about 15 000 people in each town will be provided at a cost of \$1.2 million.

Plans for the implementation phase of the project are well in hand, and it is expected that the construction of works under the "immediate" programme will start shortly.

CHAPTER 15

REGION OF THE AMERICAS¹

Communicable Diseases

The danger of reintroduction of smallpox into countries where it is no longer endemic was illustrated in Argentina in June when 23 secondary cases occurred as a result of one case imported from Brazil, which is the only country in the Americas where smallpox is still endemic. Brazil continued its eradication activities and steady progress was maintained, fewer than 1800 cases being reported in 1970, compared with 7407 in 1960.

During 1970, more than 30 000 000 persons were vaccinated, bringing the total number of vaccinations during the attack phase of the campaign to over 75 000 000. The average take rate has been 95 per cent. for primary vaccination and 85 per cent. for revaccination. By the end of the year, systematic vaccination programmes had been completed everywhere except in the sparsely populated Amazon region.

In Argentina the Government provided financial support for the smallpox programme, which had fallen behind schedule. Up to the end of September, Colombia had vaccinated almost 12 503 500 persons, representing a 75 per cent. coverage of the country. Ecuador began a new maintenance programme with emphasis on the vaccination of children under five years of age. Financial problems obliged Paraguay to postpone the attack phase. The programme in Uruguay was aimed at covering 90 per cent. of the population of eight states in 1970, and a beginning was made in the production of freeze-dried vaccine. The maintenance programmes in Central America, the Caribbean area and Mexico, which have been free from smallpox for many years, were incorporated in local health units. In some countries, the maintenance programmes were delayed for financial reasons.

Studies of natural immunity against typhus fever were conducted in Bolivia as part of the field test of a live-virus vaccine carried out in co-operation with the Medical School of the University of Maryland, USA.

To help combat venereal diseases, which are widespread in the Region, the Organization provided assistance in training personnel in control techniques and in improving laboratory diagnostic services. Colombia was assisted both in preparing a programme and in holding a course for physicians and health visitors in the epidemiology and control of venereal diseases. Assistance was given to Cuba for a study of laboratory techniques for the diagnosis of syphilis, and to Chile and Ecuador for venereal disease control activities.

Fifteen countries of the Region took part in the programme for the inter-laboratory evaluation of tests that is organized annually by the International Reference Centre for the Serology of Treponematoses, at the Center for Disease Control, Atlanta, Ga., USA, as a means of improving laboratory performance in the diagnosis of venereal diseases.

The Organization provided fellowships for participants in the fourth international course on the bacteriology of tuberculosis, held in April in Venezuela, which was also the host country for the second regional course on epidemiology and administration in the control of tuberculosis; it took place from September until November.

The Organization assisted the Governments of Bolivia, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, Guatemala, Haiti, Nicaragua and Panama in studying the prevalence and epidemiological characteristics of leprosy, in planning, organizing and evaluating control programmes, and in training personnel. Assistance was also provided for the integration of leprosy control activities into the national health services. A course in the prevention of deformities due to the disease was conducted in Cuba and one in leprosy control in Bolivia.

Advisory services, supplies and equipment for plague control were provided for Brazil, where research on the epidemiology of the disease was conducted, and for Peru, where activities for surveillance and the control of rodent reservoirs were undertaken. The Organization also assisted in studies on the ecology of rodents.

An infrastructure of veterinary medical services was established in several countries and epidemiological surveillance programmes, dealing particularly with

¹ In the Region of the Americas the Pan American Sanitary Bureau has a dual capacity as secretariat of the Pan American Health Organization and Regional Office of the World Health Organization.

rabies, brucellosis, animal tuberculosis and hydatidosis, were developed in many parts of the Region. Schools of veterinary medicine were provided with supplies and equipment, fellowships, and training grants for teaching staff.

Fifteen countries received assistance from the Pan American Zoonoses Centre, in Ramos Mejía, Buenos Aires, Argentina, for programmes for controlling zoonoses, training scientific personnel and evaluating vaccines and laboratory programmes. Biological reagents were provided for diagnostic purposes. The Centre, which is assisted by the Special Fund component of the United Nations Development Programme (UNDP), made recommendations concerning the use of brucella vaccines and the diagnosis of brucellosis, and assisted in programmes for the control of canine rabies and hydatidosis. A survey of bovine tuberculosis was conducted in Argentina and a seminar on the subject was held in Santiago, Chile.

Thirty-four countries co-operated in the rabies epidemiological surveillance programme which completed its first year of operation in July. The Centre brought out the first semi-annual report on rabies surveillance (July-December 1969) and a series of monthly reports in 1970.

The Centre assisted the Governments of Argentina, Brazil, Costa Rica and Cuba by training staff in the production and management of laboratory animals and by supplying approximately 1000 selected animals. It provided courses on laboratory methods for the diagnosis of rabies and of hydatidosis, production and control of human antirabies vaccines (see page 21), food microbiology and hygiene, meat inspection, veterinary public health and epidemiology of the zoonoses.

Information was collected on the needs of 26 countries in Latin America and the Caribbean area in the field of zoonoses control, particularly in relation to the part that the Pan American Zoonoses Centre might play. A request has been submitted to the Special Fund of UNDP for further assistance to enable the Centre to extend its activities.

Through the Pan American Foot-and-Mouth Disease Centre, in Rio de Janeiro, technical assistance was given to 11 countries in controlling or combating outbreaks of foot-and-mouth disease. Trials were made of vaccines and research was undertaken on the typing and subtyping of foot-and-mouth disease viruses, the mutagenic alteration of the virus, and the production of inactivated vaccines and modified live-virus vaccine. International courses on the control and prevention of foot-and-mouth disease were organized by the Centre. The Inter-American Development Bank made loans to several governments for

foot-and-mouth disease control programmes for which the Centre provides technical guidance.

In 1970, the Commonwealth of Puerto Rico, the United States of America and the Virgin Islands (USA) were entered on the WHO official register of areas where malaria eradication had been achieved. The Dominican Republic succeeded in confining malaria to a few foci.

A review of the strategy of malaria eradication as recommended by a resolution of the Twenty-second World Health Assembly (see page 27) was carried out in Costa Rica, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua and Panama. Costa Rica was classified as a "country with a malaria eradication programme where the prospects for eradication are good in the present circumstances", but it was considered too early to evaluate the prospects of a three-year programme recently started in Panama. Activities in the other six countries had been slowed down by technical, administrative or financial factors, and long-term malaria eradication efforts were recommended. For the areas where DDT was not effective, the use of the carbamate insecticide propoxur (OMS-33) was recommended. In several field trials in El Salvador, this insecticide proved to be effective against DDT-resistant strains of *Anopheles albimanus*, the main vector in Central America. In view of its high cost, special efforts were made to find the most efficient and economic method of application.

In Paraguay, the percentage of blood slides taken from fever cases that showed malaria parasites was 35.4 for the first five months of 1967, but following the introduction of residual spraying with DDT in 1968, it dropped to 2.1 for the corresponding period of 1970. In Cuba, the last indigenous case occurred in June 1967, and the malaria eradication programme, which was placed in the maintenance phase in 1970, was incorporated in the general health services. In those parts of Brazil, Colombia, the Dominican Republic and Peru where the programmes were well into the consolidation phase, a beginning was made in integrating antimalaria activities with regular health services.

In a programme to improve methods of diagnosing Chagas' disease, antigens were tested and more effective techniques for the complement-fixation test were developed. The Organization provided Uruguay with some equipment for a national control programme and signed an agreement with Peru for assistance to a control project to be undertaken in the southern part of the country. The plans included collaboration with the University of Arequipa in making surveys and evaluations and in undertaking research.

At the end of the year, the *Aedes aegypti* eradication programmes in the Cayman Islands, French Guiana,

Guadeloupe and Martinique were in the attack phase, and the campaigns in Barbados, Guyana, St Lucia and Surinam had been reorganized. In Venezuela the area of control was extended along the border with Colombia, which requested assistance from the Organization to deal with reinfested areas. In both El Salvador and Honduras, which had become reinfested with the vector after having achieved its eradication, financial difficulties hindered activities.

Non-communicable Diseases

In 1970 the Organization continued to promote work on the detection and treatment of cervical cancer, on radiation therapy and on cancer registration. It assisted in planning a training centre in exfoliative cytology in the eastern Caribbean to help to meet the need for a cervical cancer detection service, and supported the training activities of the cervical cancer control programme in Santiago, Chile. Physicians and technicians from Latin American countries received fellowships for cytology training.

Surveys of the extent of tobacco smoking and of attitudes towards it were initiated by the Organization in eight cities: Bogotá, Caracas, Guatemala, La Plata, Lima, Mexico, Santiago de Chile and São Paulo. This study is assisted by the American Cancer Society.

The Organization undertook an epidemiological study of rheumatic diseases in twelve countries in the Americas. Case histories of 600 patients were analysed.

Environmental Health

Emergency assistance provided in connexion with the earthquake disaster in Peru included information on sources of supplies and materials required to deal with sanitation problems in disaster areas, and advice on emergency shelter arrangements and on the relocation and reconstruction of villages destroyed by the earthquake. Drugs, biological substances and medical equipment were also supplied.

The technical staff of the Pan American Sanitary Engineering and Environmental Sciences Centre, set up in Lima, Peru, in 1968, was strengthened in the fields of water supply and water pollution. A project was initiated for the survey of existing water treatment plants with a view to suggesting relatively low-cost alterations to increase their capacity and improve their performance.

Since 1961, governments of countries in the Region have committed over US \$1700 million for water supply improvements benefiting 72 million people.

In 1970, 72 per cent. of the 146 million people living in urban areas and 16 per cent. (20.7 million) of the total rural population were served with potable water either through house connexions or public outlets. Twenty-one countries reached or went beyond the goal set by the Charter of Punta del Este of providing potable water to 70 per cent. of their urban populations. With regard to rural areas, only Barbados, Costa Rica, Cuba, Trinidad and Tobago, and Venezuela reached the 50 per cent. goal established by the Charter. Revolving funds to finance rural water supplies were either in operation or under consideration in 11 countries. A description of the project for supplying water to rural communities in Argentina will be found on page 135.

The Inter-American Development Bank, the United States Agency for International Development and other loan-granting bodies approved loans to a total of US \$121.9 million for water supply projects in countries of the Region, and national contributions for the same purpose totalled \$262.8 million.

Assistance was given to 12 countries in developing and implementing systems for the management of water and sewerage agencies.

The Pan American Air Pollution Surveillance Network was extended and operated in 19 cities in 15 countries. The Government of Chile created a national commission on air pollution, and the Organization assisted in preparing a plan for a national air pollution survey.

A symposium on water pollution control in Latin America and the Caribbean area preceded the XVIII Inter-American Sanitary Engineering Congress, held in Caracas, Venezuela, in August. Assistance on water pollution control was provided for Buenos Aires and Rio de Janeiro and to projects for the development of the Lerma river basin in Mexico and the Bogotá river basin in Colombia.

The Organization provided advice on the planning of sanitation services in new communities resettled in the course of projects for river basin development, and helped to develop national sanitation programmes, particularly in rural areas, in Bolivia, the Dominican Republic, Haiti, Panama and Paraguay.

It was estimated that about 42 per cent. of the urban population of countries of the Region (excluding Canada and the United States of America) lived in areas with sewerage or excreta disposal services, as compared with 3 per cent. of the rural population. Planning was started for the expansion of the sewerage system of São Paulo, Brazil. Advisory services were given to Guayaquil, Ecuador, for the establishment of a unit to build an expanded sewerage service.

Technical assistance in education and training in sanitary engineering was provided to 37 universities in 22 countries and the Organization helped to develop training programmes for officials in water supply agencies in Brazil, Uruguay and Venezuela.

Organization of Health Services

A system was established for evaluating the health planning process of Latin American countries, thus enabling the Organization's technical assistance policy to be adjusted as required to meet changing needs.

Assistance was provided to El Salvador, Honduras and Panama in evaluating their health plans and reformulating them to cover a greater number of institutions and programmes. As a first step in health planning in Costa Rica, a health sector policy was defined. In collaboration with the Latin American Institute for Economic and Social Planning, assistance was given to Bolivia in preparing the health aspects of a strategy for economic and social development.

As part of the Pan American Programme for Health Planning, the ninth international health planning course was held during 16 weeks for students from 14 countries, and assistance was given to a ten-week international health planning course given in English at the University of the West Indies.

The Organization's activities in the development of administrative methods and practices have increased in scope and intensity. Advice was provided to several countries and a number of fellowships in administration were awarded. Fifty-four projects were in operation to improve and expand the administrative system of public health services. Of these, 24 were nationwide, 11 were limited to specific areas, and 11 more were for assistance in dealing with special public health problems. Eight were for the establishment or development of basic health services and two for the emergency rehabilitation of disaster areas. Most of these projects were concerned with increasing the operational capacity of existing health facilities and the construction of new ones, updating the health legislation and the administrative and information service systems, improving the quality of personnel and obtaining a better evaluation of activities. Several projects continued studies of the present and future impact of river basin development programmes on health needs and services.

A survey of basic health legislation enacted in the Americas during the last 20 years (1948-1968) covered three major areas: constitutional provisions, special legislation, and relevant provisions of penal codes. The survey showed the great diversity of national enactments on health matters and underlined the need to update much of the existing legislation,

particularly in relation to new developments in the health field and to modern technology.

Five countries were assisted in co-ordinating the medical care services provided by ministries of health, social security institutions and faculties of medicine. Assistance was given to nine countries in the planning and administration of hospitals, and six intensive care units in university hospitals were in operation with financial assistance provided by the W. K. Kellogg Foundation (see page 136).

Four countries received assistance in hospital maintenance. Among the first activities of the Centre for Hospital Maintenance and Engineering, newly established in Caracas with financial assistance from the Special Fund component of UNDP, were various courses in this special field. Seminars on hospital administration were assisted by the Organization in Cuba and Peru. The Latin American Centre for Medical Administration in Argentina, which is supported by the Government of Argentina and by the Organization, held seminars on hospital architecture, hospital engineering and the application of behavioural sciences in administration. It conducted a research study on the quality of medical care and a study on the use of scientific methodology in operational research.

In co-operation with the Government of Mexico and the United Nations, the Organization sponsored a conference on rehabilitation of the disabled in Mexico City in October (see page 212).

The Organization helped several countries in preparing requests for financial support for the development of health laboratory services. Thus assistance from the Special Fund component of UNDP was approved for the modernization of national health laboratories in Mexico. A request was submitted for Special Fund assistance for the National Institute of Hygiene in Cuba. Feasibility studies were completed in support of a request for a loan from the Central American Bank for Economic Integration to build a new biological institute in Guatemala and of an application to the Inter-American Development Bank for the construction of new buildings for the national institutes of health in Peru.

Assistance in nursing services was provided to 28 countries and territories of the Region through 62 projects; 34 were specifically nursing projects and 28 were projects in which nursing was one component. A second working group on nursing programming was convened with the participation of 28 nurses from eight Latin American countries. Studies on nursing needs and resources and the utilization of nursing personnel were carried out in the English-speaking countries of the Caribbean area, as well as in 10 Latin American countries. Assistance was provided in the

administrative organization or reorganization of the urban and rural nursing services of 25 countries. Technical assistance was focused on nursing services for mothers and children and for family planning, and on the training of lay midwives.

Educational activities formed an integral part of all nursing projects. Continuing educational programmes in administration of nursing services were developed in the Dominican Republic, El Salvador, Guatemala and Panama, with the participation of 139 nurses. Assistance was provided in organizing 25 short courses or seminars—seven in the area of nursing care, eight in education, five in maternal and child health, four in administration of nursing services and one in programming in nursing. In all, about 700 nurses and midwives participated. The Organization assisted 82 educational institutions to provide basic and post-basic courses in nursing and midwifery and to draw up programmes for training nursing auxiliaries. Emphasis was placed on the review of curricula, the training of teaching staff and the redefinition of the nursing educational system. Argentina, Brazil, Colombia, Ecuador, Mexico and Venezuela were helped in establishing criteria for the preparation of nursing personnel at three levels—university, intermediate and auxiliary. In Ecuador, a study of needs and resources in nursing in the central and southern regions was brought up to date. A second baccalaureate programme for nurses and five courses for nursing auxiliaries were initiated and a programme of continuing education for the faculty of schools of nursing was developed.

Technical assistance was provided to strengthen and extend health education services in thirteen countries. The fourth seminar on theory and practice of community health education, held in Buenos Aires with assistance from the Organization, was attended by 32 participants. In Brazil a new National Division of Health Education was created at federal level with advisory, technical and supervisory functions. Assistance was given for school health education in Argentina and Brazil, for health education in family planning programmes in Guyana and in Trinidad and Tobago, and for an international seminar on health education in Panama.

A PAHO scientific group for the establishment of a multinational programme in nuclear medicine met in Washington in March; further details are given on page 70. The Organization assisted in training courses in radiation health in Argentina, Colombia and Peru.

Health Statistics

The fifth report on *Health Conditions in the Americas*, covering the period 1965-1968, was issued in September

in time for the Pan American Sanitary Conference/WHO Regional Committee for the Americas.

The field work of interviewing and collecting data for the inter-American investigation of mortality in childhood was completed in almost all of the 13 study areas in eight Latin American countries. Information of a medical, household, nutritional and socio-economic character was obtained on approximately 35 000 children under five years of age who died during the two-year period of the investigation. Comparable data were collected on over 20 000 children under five years of age in a probability sample of households in the same communities. This material has not yet been analysed in detail but a progress report based on 6500 deaths in eight areas was presented to the PAHO Advisory Committee on Medical Research in June 1970. The study provided quantitative measurements of the prevalence and degree of malnutrition in many areas and data on its association with deaths from parasitic and other communicable diseases. The nutritional aspects of the investigation, together with proposals for the classification of nutritional deficiencies in the Ninth Revision of the International Classification of Diseases, were discussed at a meeting of experts on nutrition held during the year.

In preparation for the Ninth Revision, the Organization and the Latin American Centre for the Classification of Diseases drew up plans for a study of multiple causes of death appearing on death certificates and hospital records in countries of the Region. A review of the Spanish medical terminology used in the Classification was initiated. A draft of Volume 2 of the Eighth Revision in Portuguese was prepared, under contract, by the Faculty of Medicine of Ribeirão Preto, Brazil. The adaptation of the Eighth Revision for use in dentistry was published in Spanish.

About 200 persons were trained in health statistics or medical records in intermediate-level courses at five Latin American schools of public health and in three special courses in medical records. Auxiliary-level training was accelerated and over 1000 persons were enrolled in short training courses intended particularly for personnel working with hospital records and statistics.

The School of Public Health of Chile initiated a two-year course to prepare biostatisticians to teach or to undertake research in faculties of medicine or schools of public health. Professional-level courses were conducted in Argentina and Brazil.

Advisory services in computer science were provided to Member governments. The first meeting of the Regional Advisory Committee on Computers in Health was convened in April in Buenos Aires, and its report was issued in the PAHO *Scientific Publication*

series.¹ It stressed the importance of computer applications in health statistics and health planning and recommended that health personnel should be trained in the use of modern computer techniques. A regional processing centre for health data was inaugurated in Argentina in April with support from the Ministry of Health, the University of Buenos Aires, UNDP and the Organization. Computer-based systems were developed for the inter-American investigation of mortality in childhood. Solutions were found for several large linear programming problems in connexion with the mathematical modelling of the Santa Lucía river basin project in Uruguay, and the Organization used its computer facilities to undertake statistical analyses of data in a large blood bank.

Food and Drug Control

Officials from 24 American countries participated in the drug control seminar held at Maracay, Venezuela, in November to discuss procedures for improving the drug control situation in the Region and providing countries with services for the quality control of drugs.

The participants at the sixth annual seminar for food and drug control officials of Central America and Panama made recommendations regarding food standards, improvements in the present arrangements for testing foods, and the need for up-to-date legislation on drug control and on the use of chemical pesticides and of colouring agents.

The Organization provided advisory services on drug control problems to Peru and the Caribbean countries and on the training of pharmacists to Chile.

Ten drug analysts from Latin American and Caribbean government services were enabled to attend an intensive training course provided by the United States Food and Drug Administration. The Organization also sponsored a course on microscopy for the study of foods in Panama during March-April, a food microbiology and hygiene training course in Montevideo during May, and a national course on food microbiology and hygiene in Bogotá during July.

Family Health

In order to increase knowledge and understanding of population dynamics and the need for family planning, and to increase the ability of countries to develop and expand their activities in this field, a five-year education and training programme including seminars, pilot

courses and fellowships was initiated for health professionals and educators and for the general public. A meeting of representatives of schools of public health was held in Chile in this connexion.

Advisory services in family health, including maternal and child health and family planning, were provided at the national level in the five Central American countries and Panama, and in Colombia, Ecuador, Guyana, Haiti, Jamaica and Trinidad and Tobago.

Teaching activities in clinical and social paediatrics were continued in Chile and Colombia. The Organization sponsored a seminar in Costa Rica on maternal and child health and family planning in Central America and another in Chile on maternal and child health administration; a seminar on perinatology was organized in Brazil in collaboration with the International Children's Centre and the Inter-American Children's Institute.

The Latin American Centre for Perinatology and Human Development was set up in Montevideo, following an agreement between the Government of Uruguay, the University and the Organization, to undertake advanced training activities and research, and to give advice on preventive care and prompt treatment for pregnant mothers and newborn infants in the countries of the Region.

Assistance was given to strengthen the teaching of the biology of human reproduction in faculties of medicine, and the teaching of demography in schools of public health.

Health Protection and Promotion

Advisory services, fellowships and financial assistance were provided for postgraduate nutrition courses held in São Paulo and Recife, Brazil, and in Puerto Rico. The Institute of Nutrition of Central America and Panama conducted a one-year course in nutrition for physicians and two short courses for teachers in medical schools. In nutrition research, priority was given to studies of the interrelationship of nutrition and infection, the effect of nutrition on physical and mental development, the assessment of nutritional status, and better protein sources.

The Caribbean Food and Nutrition Institute organized area seminars on infant feeding and on the training of food service personnel, and conducted a food consumption survey in Trinidad and Tobago.

Aid was given to a UNICEF-supported programme for training nutrition assistants in Paraguay, and Venezuela was helped in assessing the teaching programme of the School of Nutrition and Dietetics of Zulia University. The national nutrition programme in Venezuela is described on page 137.

¹ Pan American Health Organization (1970) *Regional Advisory Committee on Computers in Health*, Washington, D.C. (Scientific Publication No. 211).

A programme of seminars on national food and nutrition policies was developed in co-operation with FAO and UNICEF. Advisory services in nutrition were provided for a number of projects supported by the World Food Programme.

Dental schools in Bolivia, Brazil, Colombia, the Dominican Republic, Ecuador, El Salvador and Venezuela received assistance in developing their administrative structures and curricula. The Organization provided technical assistance and UNICEF supplied equipment to the school for dental auxiliaries in Kingston, Jamaica. Chile and Colombia completed basic studies on dental manpower.

Argentina introduced fluoridation into a number of community water supplies and, in others, initiated a programme of defluoridation to keep the fluoride content within the recommended limits of the international standards for drinking-water. Colombia and Venezuela began the fluoridation of urban water supply systems. Courses in fluoridation were held in Brazil and Cuba.

The Organization provided advice on simplified dental equipment in Argentina, Brazil and Chile. Field investigations to evaluate new materials for filling and restoring teeth were begun in Colombia and Venezuela.

In mental health, the Organization gave assistance to Argentina for the modernization of the country's system of mental health care, and provided technical advice and supplies for a programme of continuing education in psychiatry for general practitioners that was newly started in the state of Bahia, Brazil. In Chile, the Organization continued its assistance to the national health services in a community psychiatry project, which includes screening of schoolchildren, referral and follow-up of psychotic patients, treatment of alcoholics, and care in four outpatient clinics in the Santiago northern health district.

Advice was given in Costa Rica on the reorganization of the mental health department and of nursing services at the psychiatric hospital, and in Venezuela on the planning of a child psychiatric unit in the Caracas Children's Hospital. The Organization co-operated with the University of the West Indies and with local authorities of countries in the Caribbean area in organizing community psychiatric services and in training personnel.

The national occupational health services in Cuba and Venezuela were evaluated and assistance was provided in reorganizing those in Mexico. An inter-regional seminar on occupational health training was held at the Institute of Occupational Health and Air Pollution Research, Santiago, Chile.

Education and Training

Seminars, courses and training activities in nursing, health education, maternal and child health, environmental health and other fields are mentioned earlier in this chapter.

The processing of the data collected in surveys in medical schools in Latin America continued, and preliminary results of the study on attitudes and behaviour of medical students were presented to the ninth meeting of the PAHO Advisory Committee on Medical Research. Information on these subjects was made available to medical schools and health authorities in the Region.

The Organization collaborated with the Faculty of Health Sciences of the University of Brasilia in formulating plans for a centre to train teaching personnel for new medical schools in Brazil. Assistance was given to the seminars on structural planning, on curriculum and on evaluation of educational institutions that preceded the annual conference of the Brazilian Association of Medical Schools.

Advisory services were provided to Argentina in planning a programme to train teaching personnel for the country's schools of medicine; to the School of Medicine of the University of Chile for a programme of rural internship for new physicians; to two faculties of medicine in the Dominican Republic in conducting a study of needs for teaching personnel and for structural reforms; to the School of Medicine of the University of El Salvador in establishing an integrated faculty of health sciences; to the Autonomous University of Honduras in establishing a health sciences division; to the National Council of Peruvian Universities in organizing a symposium on the development of human resources and in the administrative and structural reform of teaching institutions; and to the School of Medicine of Barquisimeto, Venezuela, for a programme of teaching in psychiatry.

The Organization sponsored workshops in human relations and medical teaching in Brazil, Ecuador, Honduras, Peru and Venezuela; seminars on teaching of behavioural sciences in Brazil and El Salvador; seminars on the definition of educational objectives and design of curricula at the Federal University of Pernambuco, Brazil; a seminar on demography and epidemiology in Montevideo, Uruguay; and a course on methodology of research in behavioural sciences at the medical and dental schools in Venezuela.

The reports of six groups of experts set up in connexion with the textbook programme were distributed to all medical schools and related institutions in Latin America (see page 136). The reports deal with the teaching of pathology, biochemistry, pharmacology, physiology, paediatrics and preventive

and social medicine. A loan of some US \$2 million has been approved by the Inter-American Development Bank for the extension of the programme.

To assist in the implementation of the resolutions taken in 1969 by the first Conference of Ministers of Health of the English-speaking countries of the Caribbean area, a five-year programme for the development of human resources in that area was initiated by the Organization in January.

In Colombia, the experimental studies on health services, and particularly on the use and training of auxiliary personnel, were pursued with assistance from the United States Agency for International Development. Trials were begun in three selected rural areas of a system of health care based on the delegation to auxiliary personnel of certain functions currently performed by professional staff.

Research

The ninth meeting of the Pan American Health Organization's Advisory Committee on Medical Research was held at Washington, D.C., in June. It reviewed current research and research training activities in such fields as arbovirology, medical mycology, parasitology, immunology and immunochemistry, human nutrition, health statistics, health aspects of population programmes and operations research.

A special session was devoted to the problem of nutrition and metabolic adaptation, dealing first with the many biochemical functions that reveal adaptive changes and subsequently with ways of defining the range of adaptation compatible with normal function and with the criteria for distinguishing between normal and abnormal. The findings of current research on various aspects of the educational process in medicine were reviewed.

A programme of research in epidemiology and communications science was jointly undertaken by the Government of Colombia and the Organization (see page 99).

A summary of 123 research projects in which the Organization participates in the Region was issued under the title *Research in Progress, 1970*.

Co-operation with other Organizations

The Organization was represented at the Eighth Extraordinary Meeting of the Inter-American Economic and Social Council held in Caracas in February; the meeting of the Board of Governors of the Inter-American Development Bank in Punta del Este in April; the Fifth and Sixth Extraordinary Sessions of the Committee of the Whole of the Economic Com-

mission for Latin America in New York in May and June respectively, the latter in relation with the earthquake in Peru; and the twenty-first meeting of the Inter-American Committee on the Alliance for Progress (CIAP), held in Washington, D.C., in September.

The Organization participated with the Secretariat of CIAP in the studies that preceded the reviews of programme activities in individual countries.

The Organization sent an observer to attend the General Assembly of the Organization of American States (OAS), the first such meeting under the latter's new Charter, and participated in the studies leading to the revision of the relationships between OAS and the specialized agencies.

Scientific and Public Communications

The *Gazette*, a quarterly magazine for the general public published in English and Spanish, had a combined circulation of 22 000 per issue. World Health Day again played a major part in the information programme: visual material and press kits in English, French, Spanish and Portuguese were sent to 3650 editors of publications and 10 000 kits were distributed to the general public. A total of 170 press releases was put out during the year in English, Spanish and Portuguese, and three new radio programmes were prepared.

Six new titles were added to the 43 colour filmstrips produced in previous years. During 1970, 5000 copies of filmstrips were distributed for use as teaching aids, primarily for university-level students of the health professions, and 60 films were loaned for outside showing.

A list of the official documents and scientific and other PAHO publications issued during the year, with indications of the language in which each appeared, will be found in Annex 10.

Administrative and Organizational Developments

Activities in maternal and child health and family planning were combined in a Department of Health and Population Dynamics. An epidemiological surveillance unit was organized in the Department of Communicable Diseases of the Regional Office. A section of computer science was established by consolidating in a single unit all the staff engaged in computer activities and the available equipment resources.

The number of Zone Offices housed in quarters owned by the Organization was increased to five by the purchase of facilities in Caracas.

The Regional Committee

The XVIII Pan American Sanitary Conference, which was also the twenty-second session of the WHO Regional Committee for the Americas, was held in Washington, D.C., from 28 September to 8 October 1970. It was attended by representatives of 25 Member States in the Region and by those of France, the Netherlands, and the United Kingdom of Great Britain and Northern Ireland. An official observer from Canada was present, as were observers from the United Nations, UNICEF, UNDP, ECLA, FAO, the Organization of American States, the Inter-American Development Bank and 14 non-governmental organizations. Also present were the Chairman of the Executive Committee of the Pan American Health Organization, and the Director-General and an Assistant Director-General of WHO.

Dr Abraham Horwitz was elected as Director of the Pan American Sanitary Bureau for a fourth four-year term to begin on 1 February 1971, and his designation for reappointment as Regional Director for the Americas was communicated to the Executive Board of WHO.

The appropriations for PAHO for 1971, amounting to US \$15.2 million, were approved and the proposed WHO programme and budget estimates for the Region for 1972 were endorsed for transmission to the Director-General.

Satisfaction was expressed at Canada's declaration of intent to join the Pan American Health Organization as soon as the necessary administrative and financial arrangements were completed.

The Regional Director presented his annual report for 1969, describing the operation of some 600 health projects in the Region. He also presented the quadrennial report for 1966-1969 and the four-yearly report on health conditions in the Americas, 1965-1968, as well as the general programme of work for the period 1973-1977 which was approved.

Concern was expressed lest cholera might appear without warning in the Americas, and the Director-General made a presentation on the subject. Note was taken of the agreement concluded with the Center for Disease Control, Atlanta, Ga., USA, for a second

course to train doctors from the Region in the bacteriological diagnosis of the disease.

The report of the PAHO study group on the prevention of *Aedes aegypti*-borne diseases and a document on the cost-benefit aspects of preventing these diseases in the Region were presented to the meeting.

With respect to malaria, the Committee drew attention, *inter alia*, to the importance of incorporating malaria eradication programmes into that part of national development plans that dealt with the health sector, and requested that there be a strengthening of research into methods of interrupting malaria transmission and of evaluating the economic impact of malaria eradication. It reaffirmed that smallpox eradication continued to be one of the most important priorities for the Region and urged countries to strengthen their eradication or maintenance programmes.

The Committee gave particular attention to the question of man-environment relationships; it recommended that the Organization intensify its programme of assistance for controlling environmental health hazards and requested the Regional Director to develop environmental health projections for the 1970 decade, including long-range goals and the design of programmes to monitor pollution trends and implement essential control measures.

A series of general guidelines for the establishment and operation of multinational centres for dealing with health problems that were of common interest to several countries was also approved by the Committee. It also authorized the Regional Director to establish an office to compile information on the relationship between smoking and health in the Region and to initiate a survey of smoking habits in eight cities.

Technical discussions were held on "Venereal diseases as a national and international health problem". The subject chosen for the 1971 technical discussions was "Environmental pollution".

The invitation of the Government of Venezuela for the XX Meeting of the PAHO Directing Council/ twenty-third session of the WHO Regional Committee for the Americas to be held in Caracas in 1971 was accepted.

Some Aspects of Work in the Region

A list of the projects current during the year will be found in Part III. The following have been selected for fuller description.

Water Supplies for Rural Communities, Argentina

In 1965 only a small percentage of the rural population of Argentina was supplied with potable water.

To deal with this problem, the health authorities created the semi-autonomous National Service for Potable Water and Rural Sanitation (SNAP), which has the task of supplying drinking-water to rural communities with between 100 and 3000 inhabitants by means of house connexions from locally operated systems. The programme is carried out at three levels: at the national level SNAP is responsible for planning, laying down standards, supervising and administering funds and advising and training staff; services at the provincial level develop the projects, construct the necessary works, and supervise the operation and maintenance of the supply systems; and at the community level councils have been set up to operate the local supply systems.

The Organization has assigned an adviser and short-term consultants to the project, as well as providing fellowships and training courses for operators and administrators of water services.

The programme provides for the creation of 225 rural water supply systems at a cost of US \$10 million. A loan from the Inter-American Development Bank covers 50 per cent. of this sum. In order to reduce the need for external loans in the future, the charge to the communities is fixed at a level permitting the creation of a national revolving fund as well as repayment of the loan and interest. The systems are financed as follows: 20 per cent. of the funds are contributed by the Federal Government, 10 per cent. by the provincial authorities, 20 per cent. by the community, and the remaining 50 per cent. by SNAP on the loan terms described above. The community repays the loan in monthly instalments covering the installation of equipment, operation and maintenance.

By late 1970, 21 provincial services had been organized and 180 communities were supplying water to 220 000 users. More than 500 persons had been trained as engineers, administrators, promoters of water plants, well-drillers, supervisors or maintenance men. All the communities were punctually repaying the loans, and the majority were setting small sums aside for future expansion and for emergencies.

A feasibility study is undertaken for each project, and health education of the public has been a feature of the programme from the outset.

The financing system developed by SNAP has been used by the national health authorities in other programmes, including the supply of drinking-water to communities of less than 100 persons, the improvement of local housing and the development of facilities for wastes disposal.

Progressive Patient Care in Latin America

With assistance from the W. K. Kellogg Foundation, the Organization has co-operated in the establishment

of intensive care units at university hospitals in Belo Horizonte (Brazil), Santiago (Chile), Bogotá (Colombia), Montevideo (Uruguay), Lima (Peru) and Maracaibo (Venezuela). These units, which were all in operation by the end of 1970, are used to familiarize medical students and nurses with the first stage of progressive patient care.

The units cater for critically ill persons with a chance of survival. Each has 10-12 beds, four of which are reserved for coronary patients who need monitoring. The staff is not dependent on any individual clinical department, and each unit is supervised by a medical co-ordinator and a nurse, who are responsible for the clinical work, and by a unit manager entrusted with the non-clinical work. In addition, there is an assistant administrator empowered to appropriate and assign funds for necessary transformations and the purchase of equipment.

The Organization has advised the participating hospitals on the transformations needed to make the units functional; on equipment (particularly for monitoring), some of which it provided; on the training of nurses in the care of the critically ill; and on co-ordination with the sterilization, laboratory, dietetic, medical records and maintenance services. The chief problem has been that of delays in the structural transformations needed for the installation of central piped oxygen and suction systems and of complete monitoring equipment.

The training programme lays special stress on the interpretation of oscilloscope recordings and the use of special emergency equipment to deal with cardiac and respiratory arrest. The units provide valuable training in hospital administration as well as in medical and nursing techniques.

A study of the management of patients with acute myocardial infarction at the hospital in Bogotá revealed a significant decline in death rates from this condition since the installation of the intensive care unit. The project has shown that it is possible to plan and operate such units without having recourse to the sophisticated arrangements considered necessary in some industrialized countries.

In 1971, the intermediate and ambulatory stages of progressive patient care will be introduced in the hospitals taking part in the project.

Medical Education : Provision of Textbooks

In a number of Latin American countries, medical education is hampered because many students are unable to afford the necessary textbooks and have difficulty in obtaining them from libraries. In 1967, the Organization launched a programme to provide reasonably priced textbooks for some 100 000 medical

students in about 150 medical schools in Latin America. Arrangements were made to set up a revolving fund that would use the proceeds from the sale or rental of the books to make the programme self-financing. At the same time, it was decided to undertake a review of teaching programmes and textbooks in Latin America.

To implement the programme, the Organization set up a number of groups of experts, each dealing with a selected subject of the medical curriculum. On the basis of nominations by teachers in all the medical schools concerned, five professors in each of these subjects were appointed to serve on the appropriate groups and recommend the textbooks they considered most suitable. The groups also include special advisers and representatives of the Pan American Federation of Medical Schools and of the Organization.

In the light of the groups' reports, the Organization decides which books may be distributed without revision and which should be adapted before distribution to take Latin American conditions into account. It also decides whether new textbooks on certain subjects are needed. Contracts are then negotiated with the publishers for the mass supply of the books required, at special prices.

The distribution of the textbooks began in September 1968, and within a year some 48 500 copies of the books on the first four subjects—biochemistry, pathology, physiology and pharmacology—had been sent out. By September 1970, 101 medical schools had joined the programme, which will be extended in consequence of a loan approved during the year by the Inter-American Development Bank.

Nutrition Programme, Venezuela

A project to improve the nutritional level of the Venezuelan population was started in 1965, when the Organization provided advisory services and awarded

fellowships in nutrition to staff members of the Ministry of Health and Social Welfare. In 1968, the Government signed an agreement with the Organization whereby the National Institute of Nutrition and the country's seven medical schools would also take part in the project.

A nationwide nutrition programme was planned within the framework of the general health services, and nutrition units were established in 17 of the country's 20 states at local as well as state level. Because of the shortage of dietitians (it was estimated in 1968 that approximately 400 more were needed), a school for their training was established and the first group of students is expected to graduate in 1971. In addition, a Department of Nutrition was created in the School of Public Health at Caracas, where instruction in nutrition is now an integral part of the courses in health administration, epidemiology and health planning for physicians, nurses, veterinarians and health inspectors. During the last two years the National Institute of Nutrition has conducted in-service training programmes for almost 1700 workers in health, education and agriculture.

Hospital food services have been improved by the application of stricter standards and by the active recruitment of professional dietitians to serve on the staff. A National Committee against Malnutrition, set up in 1969, is promoting co-ordinated nutrition programmes with both private and governmental support.

A national survey conducted in 1966 had shown a goitre prevalence rate of 14 per cent. among schoolchildren. Legislation for the iodization of all salt produced in the country was introduced, and 50 per cent. of the population are already benefiting from this measure.

Extensive supplementary feeding programmes for schoolchildren and workers have had favourable repercussions on morbidity rates, mortality rates and absenteeism.

CHAPTER 16

SOUTH-EAST ASIA REGION

During the past year the proportion of the South-East Asia regional budget allocated for assistance in strengthening the general health services has been increased, with a consequent reduction in the amount devoted to the control and eradication of communicable diseases. Nevertheless, the burden of communicable diseases remains a heavy one. Despite the quite impressive early results of mass control activities, the attainment of the stage when special campaigns will no longer be needed will depend on the organization of an efficient and functional health structure, and WHO assistance during the year was directed largely to that end.

The availability of additional resources from the United Nations Fund for Population Activities has given a considerable stimulus to the family planning programme. WHO continued to co-operate in some major urban as well as other community water supply and sewerage projects supported by the Special Fund component of the United Nations Development Programme (UNDP) or UNICEF. The Organization is also helping to combat water pollution.

Seminars, training courses and other group educational activities were organized during the year on a wide range of subjects including cholera, tuberculosis, leprosy, veterinary public health, community water supply, national health planning, nursing, health laboratory services, the teaching of maternal and child health, neonatal care, family planning and human reproduction, occupational health, medical education, paediatric education and the teaching of psychiatry.

There is evidence of a tendency among economists and administrators of public services to underestimate national health needs with the consequent danger of lowered priorities being given to health when public funds are allocated.

Communicable Diseases

Training activities in epidemiology and surveillance are growing in importance. Governments are establishing epidemiological units at different levels of the health services and are undertaking surveillance of major diseases. In 1970 multipurpose serological surveys were carried out among sample populations

in several cities and have provided some information on immunological profiles.

In Burma, Nepal and Thailand, WHO helped to develop epidemiological services. Fellowships were provided to enable participants from the Region to attend the annual combined course in epidemiology held partly in Prague and partly in Delhi. The Delhi part of the course was organized, with WHO support, at the National Institute of Communicable Diseases. Early in the year an exchange of faculty members was arranged between the Prague and Delhi institutes concerned with the course in order to improve the curriculum and promote closer co-operation. WHO also provided assistance for the national course in epidemiology held annually at the institute in Delhi. Assistance was given in organizing a course in Bangkok for certain categories of staff employed in the country's epidemiological services.

Smallpox remains endemic in three countries of the Region, India, Indonesia and Nepal, and all have undertaken large-scale eradication programmes. Independent assessments of smallpox programmes carried out with WHO assistance have shown that in some countries they still suffer from organizational difficulties with inadequate supervision and deficiencies in surveillance and outbreak containment. The countries concerned have taken steps to improve reporting systems and to institute measures for the containment of outbreaks. With WHO assistance, Burma, India, Indonesia and Thailand are now producing sufficient quantities of freeze-dried smallpox vaccine to meet the requirements of the maintenance phase of smallpox eradication. A regional course on methods of improving facilities for the laboratory diagnosis of smallpox was held in Indonesia in February.

The specialized trachoma control campaigns in Burma and Thailand were expanded to achieve gradual coverage of the endemic areas.

Paralytic poliomyelitis is on the increase in all countries of the Region for which information is available, and particularly in large cities. Apart from the well-known foci in Ceylon and Bangkok, cases have been reported from Bombay, Djakarta and Kathmandu. Unless effective control measures are applied in the next few years, some areas may experience

epidemics comparable to those in Europe and North America in the pre-vaccination era.

A WHO-sponsored seminar on tuberculosis control was organized in Colombo in February, in collaboration with the International Union against Tuberculosis. The seminar formulated a generally applicable policy for tuberculosis control programmes which was widely distributed in the Region. The regional tuberculosis training and evaluation team carried out a comprehensive assessment of the country-wide tuberculosis programme which has been in operation for many years in Ceylon (see page 9) and undertook a baseline survey in order to establish certain key indices for its future evaluation. In India, the National Tuberculosis Institute in Bangalore has evolved criteria for the guidance of the national tuberculosis programme, and continued to provide training for key personnel of district tuberculosis programmes and for WHO fellows from other countries. Training programmes are also under way in Burma, Ceylon, Mongolia and Thailand.

In Burma and Thailand trials were undertaken to determine how leprosy control activities could best be integrated into the health services with WHO assistance. National training courses in leprosy control continued in several countries. The third regional seminar on leprosy control was held at Aska, India, in January (see page 224).

Cholera continued to be reported from several countries. The improvement in the diagnosis and treatment of cases was reflected in the progressive reduction in case fatality rates. Assistance was provided to Ceylon and Indonesia in developing facilities for the increased production of rehydration fluids.

The regional enteric infections team helped to organize and conduct a number of training courses in various places in India, and assisted in the study of cholera and other enteric infections in two countries. Under the new name of regional epidemiological surveillance team it is required to deal with other communicable diseases selected as priorities by the countries of the Region and to assist in developing epidemiological surveillance programmes.

No significant outbreak of plague was reported. Assistance was given to Indonesia in the investigation of an endemic focus in a district in Java. In Burma, where rodent plague has been prevalent, surveillance activities were intensified and vigorous control measures taken.

The possibility of introducing routine immunization against diphtheria, pertussis and tetanus with triple (DPT) vaccine was discussed at various training courses, seminars and other meetings organized by or with assistance from WHO. The Organization was able to advise on ways of improving the quality and

quantity of the triple vaccine produced in countries of the Region.

A regional seminar on veterinary public health, the first of its kind in the Region, was held in India in April. Assistance was provided to Ceylon, India, Indonesia and Thailand in reviewing the existing veterinary public health programmes. A training course leading to a Master's degree in veterinary public health was started in India (see page 144).

A WHO team visited Mongolia to assist the Government in preparing a request to UNDP for assistance from the Special Fund component in connexion with a project for the production of brucella vaccine.

The overall status of the malaria eradication programmes in the Region has been affected by a number of changes. Burma has requested the renewal of WHO assistance and Ceylon and Indonesia have asked for increased WHO support for their respective control and eradication programmes. A national malaria training centre was established in Ceylon. Both India and Nepal asked for their programmes to be reviewed in the light of the new global strategy for malaria eradication, and assessments were carried out in those two countries with WHO assistance. The residual spraying of DDT in several atolls of the Maldives has been successful and, with fuller coverage in the larger atolls, it is possible that malaria can be eradicated in the Maldives.

Based on the findings of the WHO filariasis research unit which completed its work in Rangoon, Burma, towards the end of 1969, a filariasis control programme was started in that area with WHO assistance. In Ceylon, as a result of control activities assisted by WHO, the downward trend of infection continued.

In the fight against vector-borne diseases insecticides are an essential tool, but precautions are required to avoid any harmful effects. In Indonesia WHO helped to train personnel in determining the degree of cholinesterase activity in the blood of spraymen and others exposed to certain insecticides, and to formulate suitable legislation on this matter (see page 143). In two other countries an assessment was made of the hazards involved in the importation, storage and distribution of insecticides, and protective measures were suggested.

Environmental Health

A regional seminar on rural community water supply was held in Khon Kaen, Thailand, in March with assistance from WHO. The rural community water supply programmes jointly assisted by UNICEF and WHO in several countries proceeded according to plan. During the year WHO gave advice regarding training and equipment for the utilization of groundwater

resources in India and Thailand, a water supply undertaking in Rangoon, surveys in preparation for schemes for water pollution control in India and Thailand, and training in sanitary engineering in Burma and Indonesia. A regional seminar on water pollution control was organized in November in Bangkok.

An interim report was presented in May on the master plan for water supply, sewerage and drainage for the south-west coastal area of Ceylon. The technical aspects and progress of this project, which is financed from the Special Fund component of the United Nations Development Programme, were reviewed by the Government and the Organization in June.

Special Fund assistance to Nepal in the development of water supply and sewerage for Greater Kathmandu and Bhaktapur was approved by the Governing Council of UNDP in January and the plan of operations was prepared.

Organization of Health Services

The first regional course in national health planning, which started at the Asian Institute for Economic Development and Planning in Bangkok in November 1969, ended in February after a period of field training in India. Assistance was provided to Burma in organizing a health planning course, as well as to Ceylon in strengthening the newly-created health planning unit. The Organization helped Indonesia in reinforcing co-ordination within the health services and in developing their basic structure. Nepal was assisted in the phased development of its health services, including family planning, and in the consolidation of the gains deriving from the malaria eradication programme. An appraisal was made of the provincial health services developed with WHO collaboration in Pitsanuloke, Thailand.

A guide for the programming of hospital facilities is being prepared in order to assist countries of the Region in planning new hospitals and in renovating or enlarging those already established.

Assistance was provided for surveys and investigations of health services, including health manpower studies. Activities in individual countries have included pilot projects in integrated health services in Burma and Ceylon; a research project in district health administration in India; and a pilot project in public health administration and a study of the feasibility of training the staff of specialized campaigns to become multi-purpose workers, in Nepal, where WHO also assisted with a seminar on teaching methodology for teachers of public health subjects and a refresher course for health assistants.

National health laboratory services have been strengthened in most countries. In Burma the plague

laboratory was improved, a rabies laboratory was established; and the bacteriological laboratory has been strengthened to provide support for cholera surveillance activities and for clinical and epidemiological studies in typhoid. In India it has been agreed that during the fourth five-year plan 50 district laboratories are to be upgraded with UNICEF assistance and eleven regional laboratories established. Courses for various types of laboratory workers were held in India (see page 144) and a meeting of administrators of health laboratory services was organized. In the UNICEF/WHO-assisted two-year course for laboratory assistants given in the Central Health Laboratory, Kathmandu, Nepal, the second group of trainees was enrolled in February. WHO has provided staff and UNICEF is procuring equipment for projects aimed at strengthening health laboratories in Indonesia and Mongolia.

In Thailand WHO assisted in a study of the activities of nursing personnel. Governments throughout the Region were helped in planning studies in both nursing and midwifery. Efforts were made to strengthen certain aspects of nursing education and service, e.g., public health, clinical practice in the care of the sick, and maternal and child health including family planning. Further assistance was given to national programmes in post-basic, basic and auxiliary nursing education, in-service and supplemental training, and the training of indigenous midwives. WHO assisted in organizing a short course in India on clinical teaching of surgical and paediatric nursing in which representatives of other disciplines took part, and several short courses for nursing personnel on subjects including guidance and counselling, ward administration, planning for patient care and hospital house-keeping (see page 145).

Lack of secondary education has prevented many nurses from countries of the Region from taking advanced nursing courses. To help to meet this situation, a training centre for nurses was set up under WHO sponsorship in Wellington, New Zealand, in January. It offers a one-year course that includes intensive training in English. This is the first regular educational programme designed for nurses from the Region who are not fluent in English and do not have the educational qualifications for admission to post-basic training programmes outside their own countries.

In work on health statistics, WHO assisted in reviewing the curricula for the training courses offered by the Model Vital and Health Statistics Training Centre at Nagpur, India, which is the only centre in the Region training personnel in coding methods and practices and accepting trainees from outside India. The Organization has supplied teaching material for national training courses in Burma. The international form of medical certificate of cause of death has been

more widely adopted and is used at least for deaths occurring in hospitals in India. Rural health records and reports have also been improved.

Increased activity in national health planning has led to the recognition of the need for more accurate health information and precise operational studies. WHO gave advice on data requirements for health planning in Ceylon. The 1970 edition of the *Summary of Vital and Health Statistics, South-East Asia Region* was brought out in September.

Preparations to include health education services in national health plans were made in three countries, and in others steps were taken to formulate annual plans on a scientific basis. Assistance was given to Indonesia in planning for the establishment and development of health education services at the national and regional levels. The guidelines drawn up at an inter-country workshop held in 1967 for the planning, implementation and evaluation of health education are now being used in most countries of the Region for both planning and training purposes. Assistance was given in organizing and conducting a workshop in Indonesia in August on the administration of a health education unit, and a regional workshop on school health education in Bangkok in November. WHO has advised on programmes for training school teachers in health education and on studies of different aspects of health education carried out in several countries of the Region.

WHO has helped Indonesia and Thailand in training radiographers in the safe operation of all forms of X-ray equipment. Assistance was provided to several countries in training technicians and artisans in the repair or maintenance of equipment, to Burma in the siting of a personal film badge monitoring service, and to India in connexion with the second course in hospital physics at the Bhabha Atomic Research Centre, Bombay. The Organization gave advice on a syllabus for an M. Sc. course in radiotherapy and radiodiagnosis at the Institute of Postgraduate Medical Education and Research, Chandigarh, India.

Family Health

Early in the year, a regional seminar was organized in New Delhi to assess the progress made in integrating maternal and child health activities into the general health services (see page 73).

In order to profit from India's experience in teaching the subjects of human reproduction and family planning, three medical educators sent by WHO studied teaching programmes in 21 Indian institutions. In April, a case study of India's family planning programme was organized by the Ministry of Health for use in the Indian part of the second international

WHO staff course on human reproduction, family planning and population dynamics. At the request of the Government of Indonesia, proposals were drawn up for the utilization of funds made available through the United Nations Fund for Population Activities to assist in training paramedical personnel in family planning, organizing workshops and developing gynaecological cytology services and setting up collections of textbooks for medical schools. WHO assisted in conducting a workshop in August on the co-ordination of national and international resources in the national family planning programme and another in October which reviewed plans for strengthening that programme.

Other WHO-assisted training programmes in this field were an inter-regional course on the methodology of clinical trials involving fertility-regulating agents and a two-month training course on the teaching of human reproduction, both held in New Delhi, and two inter-regional seminars, one in Bangkok and one in Bangalore, on recent developments in the clinical and public health aspects of human reproduction.

Health Protection and Promotion

WHO continued its support to the nutrition training activities carried out by the National Institute of Nutrition, Hyderabad, India, and assisted in carrying out an evaluation of the Indian applied nutrition programme. The Organization participated in World Food Programme projects for large-scale dairy development in India and for the distribution of milk powder to mothers and children in Indonesia through the maternal and child health services.

A seminar on the teaching of psychiatry in medical colleges was held in New Delhi in September for medical educators in psychiatry, deans of medical schools, paediatricians and non-psychiatrist staff of departments of preventive and social medicine.

Assistance in periodontology was given in India, and in the education and training of professional and auxiliary dental personnel in Ceylon, Mongolia and Thailand.

Support was given to the efforts of several countries to provide adequate health services for workers and to strengthen their legislation on occupational health and industrial hygiene. An assessment was made of the situation in Ceylon regarding legislation, safety hazards and health services available to workers in industry. Assistance was given to Indonesia in preparing a request to the Special Fund of UNDP for support to a project in occupational health. A symposium on the place of occupational health in undergraduate medical education was organized with WHO assistance at the

new Occupational Health Research Institute which was opened in Ahmedabad, India, in November. The Government has requested WHO's assistance in training personnel for medical rehabilitation services that are to be developed in large provincial hospitals of the country.

The World Health Day theme for 1970, "Early Detection of Cancer Saves Lives", stimulated further interest in cancer wherever the rising average age of populations increased the numbers of people at risk. In preparation for a cancer control pilot project in Kancheepuram, near Madras, India, various cultural and sociological studies of the population in the area were completed.

India and Thailand received assistance in developing laboratories for the quality control of drugs.

Education and Training

WHO provided a multidisciplinary team to review the teaching programmes in the King George Medical College in Lucknow, India; a similar team visited the State Institute of Medicine at Ulan Bator and drew up a five-year plan for the development of the teaching programmes.

WHO assisted medical colleges and postgraduate schools in Burma, India, Indonesia, Mongolia and Thailand by providing teaching staff. There is a widespread desire among medical educators in the Region for training in the educational sciences and considerable interest in the global medical teacher training programme being developed by WHO in collaboration with various institutions in this field.

Three meetings connected with paediatric and obstetric education were organized during the year: a course in neonatology, held in Burma; a workshop on the teaching of maternal and child health in field practice areas, which took place in Thailand; and the final meeting of the WHO-sponsored *Ad Hoc* Committee on Paediatric Education in India. The latter, which was set up in collaboration with the Indian Academy of Paediatrics and the Indian Association for the Advancement of Medical Education, adopted a draft curriculum in child health suitable for undergraduate students. An assessment was made in several countries of the Region of the extent to which the teaching of paediatrics had improved following the participation of senior teachers in the courses organized by the Institute of Child Health, London, in association with UNICEF and WHO (see page 74).

The pattern of UNICEF/WHO assistance in the Region was reviewed, and revised with particular reference to undergraduate and postgraduate paediatric and obstetric education in India. Some promising developments are taking place in individual countries.

In Burma, the Institute of Medicine I is considering the introduction of a diploma course in child health; in Mongolia, the university courses of studies for specialists in paediatrics and obstetrics are being revised; and the departments of preventive and social medicine in the medical schools in Thailand are collaborating in teaching the social aspects of these two subjects.

Co-operation with other Organizations

The continued collaboration with UNICEF, the United Nations Development Programme and a number of specialized agencies was of the greatest value in the efforts to assist countries in the Region in improving health services. There was close collaboration with the United Nations Fund for Population Activities in planning country and regional projects to be financed from the Fund.

The Regional Committee

The twenty-third session of the Regional Committee for South-East Asia was held from 22 to 28 September 1970 in the Regional Office building in New Delhi. Representatives of all Member States in the Region were present. In addition, representatives of the United Nations and United Nations Development Programme, UNICEF, Office of the High Commissioner for Refugees, United Nations Military Observer Group in India and Pakistan, ILO, FAO and UNESCO, as well as of seventeen non-governmental and other interested organizations attended the session. The Director-General of WHO was represented by an Assistant Director-General.

The Committee noted with approval a change in the presentation of the annual report of the Regional Director reflecting the growing interest of governments in strengthening basic health services, and grouping certain subjects under the heading "family health". In the discussion of the report, the importance of health planning was stressed, and attention was drawn to the course organized with the assistance of the Asian Institute for Economic Development and Planning, in Bangkok, which provided training adapted to the needs of the Region. The flexible approach adopted by WHO country programming was noted with appreciation. It was agreed that communicable diseases were still a cause for concern in the Region despite advances in their prevention and control: malaria continued to be a threat, and cholera had been reported from five countries. Health education and research in the behavioural sciences were urgent needs in this connexion.

The Committee discussed at some length the problem of ensuring living and working conditions that would attract physicians to work in rural areas and enable them to perform their duties in a satisfactory way. The problem of absorbing single-purpose workers into the basic health structure was raised. Appreciation was expressed of WHO's assistance in training health workers and thereby building up trained manpower.

The Organization had expanded its regional programme into such relatively new fields as radiation health. Air pollution, it was felt, was a subject that deserved more attention. WHO assistance was also sought in training cytopathologists for mass screening programmes in cancer control. The question of the quality control of drugs was discussed in some detail.

The Committee felt that the subject of immunology, although very highly specialized, was becoming extremely important and that countries of the Region could provide abundant clinical material for studies that would complement the laboratory investigations undertaken elsewhere.

Health statistics were considered essential for determining priorities and as a basis for planning, implementing and evaluating projects.

The Committee expressed appreciation of the quality and scope of the new edition of the *Summary of Vital and Health Statistics, South-East Asia Region*.

In the Committee's discussion on the programme planning of public health activities it was agreed that, although the absence of trained and educated staff made planning at the periphery difficult, it was necessary, for effective implementation, to involve both the staff at the periphery and the community in such planning.

The Committee adopted resolutions on long-term financial indicators, the adverse effects of tobacco smoking, and the Organization's fifth general programme of work covering a specific period.

The Committee established a sub-committee on programme and budget, consisting of representatives of all Members present, to review the proposed programme and budget estimates for 1972, which were subsequently approved for transmission to the Director-General.

"Hospital referral services" was the subject of the technical discussions and "Health statistics requirements for national health planning" was chosen as the subject for the technical discussions to be held in 1971.

The Regional Committee confirmed its earlier decision to hold its twenty-fourth session in Rangoon, Burma, in September 1971. After some discussion, and after discussing the principle of holding alternate sessions at the Regional Office, the Committee decided to make an exception to that principle and to accept the invitation of the Government of Ceylon to hold its twenty-fifth session in that country in 1972.

Some Aspects of Work in the Region

A list of the projects current during the year will be found in Part III. The following have been selected for fuller description.

Hazards to Man from Pesticides, Indonesia

In 1969, WHO assigned a medical toxicologist to Indonesia for two months to study the hazards to man involved in the use of pesticides in agriculture. The investigation was primarily concerned with acute pesticide poisoning, but the question of chronic long-term exposure was also considered. In the course of his assignment, the consultant visited Bali, Central, East and West Java, and North Sumatra.

Studies of both the general population and workers exposed to pesticides showed that cases of acute pesticide poisoning were unusually frequent. The application of legislative, organizational and educational measures was therefore recommended. More detailed studies on morbidity and mortality due to chronic

exposure were suggested, and a research project on the subject is now under consideration.

The WHO consultant also made recommendations to the Government on the import, transport and storage of insecticides and the disposal of their containers and demonstrated the Acholast cholinesterase test to public health workers.

Two more WHO consultants visited Indonesia in 1970. One trained a group of technologists in the use of the tintometer in determining blood cholinesterase levels. In the course of several field visits, he tested blood samples from workers continually exposed to pesticides and from non-exposed persons; only one of the samples examined showed any abnormal lowering of the cholinesterase level. WHO has supplied tintometers for use in the field by the staff trained by this consultant.

The second consultant—an expert on legislation concerning pesticides—visited Indonesia for four weeks in July and August, during which he conferred

with government, university and industrial authorities concerned with pesticide handling. He confirmed the fact that many aspects of the supply, sale and use of pesticides in Indonesia were unsatisfactory and recommended legislative and other measures designed to make the most effective use of the financial, scientific and administrative resources available.

Further assistance to this project is planned, notably for investigating the degrees of risk involved in chronic exposure to various types of pesticide.

Strengthening of Laboratory Services, India

Under a WHO-assisted project to strengthen laboratory services and improve the training of laboratory technicians in India, laboratory workers are being trained at Chandigarh and at Trivandrum.

In *Chandigarh*, courses are provided at the Department of Pathology of the Institute of Postgraduate Medical Education and Research. WHO assistance started in January 1967 with the arrival of a WHO laboratory technician. A syllabus and curriculum for a two-year course leading to a B.Sc. degree were drawn up, and the first course started in 1967. By 1970, four full-time tutors had been appointed, 42 students were enrolled for the B.Sc. course and 15 students had successfully completed the course and were employed as senior laboratory technicians in the Institute.

In 1969, it was decided to introduce an M.Sc. course of three years' duration in microbiology, histopathology, haematology or biochemistry. This started in September 1970 with four students: two in histopathology, one in haematology and one in biochemistry.

The work of the Institute is co-ordinated with that of the public health services, and a six-week course in basic laboratory technology is offered for microscopists engaged in antimalaria work. This course has been completed by a first group of seven trainees. A fellowships programme has been arranged to provide course tutors with further training; two of them completed their fellowship work in 1970.

At *Trivandrum*, following the visit of a WHO technician in 1965, plans were made to establish a training centre at the Medical College, Kerala University, for laboratory staff intending to work in Kerala's health services. Two courses were envisaged: a one-year course for laboratory assistants and a two-year course for laboratory technicians. The first one-year course started in 1965.

Since the inception of the training centre, it has become an established department of the Medical College with its own premises, three full-time and two part-time tutors have been appointed, and a total of

80 trainees have completed the one-year course and are employed in Kerala's health or university services.

The inception of the second course has been delayed because of the shortage of national teaching staff, but it is now scheduled to start in September 1971. It will last for three years—instead of two, as originally planned—and will lead to a B.Sc. degree in laboratory technology.

Training in Veterinary Public Health

Following an inter-regional seminar on food-borne diseases and intoxications and food hygiene practice, held by WHO in New Delhi in 1967, ways and means of developing veterinary public health services in the South-East Asia Region were reviewed by the Organization. It was decided that the first step should be the promotion of facilities for postgraduate training.

In 1968, various institutes in the Region were visited by a WHO consultant, who recommended that postgraduate training in veterinary public health should be provided jointly by the All-India Institute of Hygiene and Public Health, Calcutta, which already had a well-established diploma course in public health, and the Indian Veterinary Research Institute, Izatnagar, which had one of the most extensive postgraduate programmes in biomedical sciences in the Region.

This recommendation was followed up by a series of meetings, as a result of which a two-year diploma course in veterinary public health was established with the co-operation of the Government of India, the two institutes mentioned above and Calcutta University. The first year of the course, which started in July 1970, includes most of the regular course for the diploma in public health at the All-India Institute of Hygiene and Public Health, together with specific instruction in veterinary subjects. The second year will consist of research at a recognized institution, with emphasis on applied research on veterinary public health problems of particular concern to the countries of the Region.

With the co-operation of the Indian Veterinary Research Institute, a veterinary public health unit has been established at the All-India Institute of Hygiene and Public Health. The two senior staff members of the Research Institute who are responsible for this unit were awarded WHO fellowships to enable them to study veterinary public health problems and attend courses in epidemiology, biostatistics and meat hygiene in the United States of America and to familiarize themselves with the system used for the surveillance of food-borne infections in the United Kingdom.

In addition, WHO will help to set up a veterinary public health library at the All-India Institute of

Hygiene and Public Health and will award fellowships to permit candidates from other countries in the South-East Asia Region to attend the postgraduate course.

The establishment of the postgraduate diploma course in veterinary public health—the first of its kind in the Region—was followed up by a regional seminar on veterinary public health held in April at the Indian Veterinary Research Institute, Mukteswar, for senior administrators in public health and animal husbandry. The aim was to encourage the creation of veterinary public health units at various levels of the national health services. The report of this seminar was the first comprehensive study of veterinary public health in South-East Asia, and its recommendations—which stress the economic advantages to developing countries of better services in this field—are now being studied by Member Governments.

Short Courses for Nursing Personnel

The project for providing short courses for nursing personnel in the South-East Asia Region originated in a WHO-assisted programme that was started in 1957 to help nursing and midwifery teachers in India to increase their knowledge and skills in the administration and conduct of schools of nursing. The programme was gradually expanded to offer continuing education in a variety of subjects relevant to nursing and midwifery. As the Organization frequently received requests from governments of other countries in the Region for assistance with short nursing courses, it was decided in 1967 to start an inter-country project in this field.

Since the provision of health services is a team responsibility, emphasis is placed on the participation of nurses and midwives with representatives of other disciplines in group educational programmes. Special attention is paid to the development of more effective methods and techniques for the planning and conduct

of short courses, seminars, workshops and symposia and to meeting the need for good reference materials and teaching aids.

Since January 1969, 11 inter-country courses and 10 country-level courses have been given under the project. They were attended by a total of 372 health workers, including doctors, sanitarians and registrars of medical nursing councils, as well as nurses and midwives, and the subjects taught ranged from orthopaedic nursing to hospital housekeeping. Also as part of the project, a manual on orthopaedic nursing is in preparation and the routine collection of data likely to be of value in improving the conduct, content and evaluation of educational programmes of this kind has been started.

Two courses may be singled out for special mention—those on clinical teaching in orthopaedic nursing (New Delhi, November-December 1969) and on clinical teaching in paediatric surgical nursing (Madras, India, July-August 1970). The participants—who came from Ceylon, India, Indonesia, Nepal and Thailand—were nurses and surgeons who were already working together in the same orthopaedic or paediatric units. The joint participation of nurses and surgeons in this type of course appears to be an extremely promising means of promoting more effective patient care, and some of the governments in the Region have asked that similar courses should be held in 1971.

One of the weaknesses in the conduct of short courses of all types is that so far it has not been possible to devise effective means of evaluating their impact. It is planned to remedy this shortcoming in future courses by a form of “built-in” evaluation, in which the services of national doctors and nurses will be enlisted to provide baseline data on clinical departments, the patient care provided in them and the estimated effect of the courses in changing the ways in which such care is provided. Both medical and nursing schools will be closely associated with this aspect of the project.

CHAPTER 17

EUROPEAN REGION

In the European Region, the Organization is now concentrating the greater part of its efforts and resources in certain selected fields. In addition to the long-term programmes in cardiovascular diseases and the control of environmental pollution, a third intensified programme was approved by the Regional Committee in 1970, in the field of mental health. It is mainly concerned with the mental health of adolescents and young persons and the abuse of psychotropic drugs. The regional programme also includes studies on the uses of operational research in health services and of computers in medicine and public health, as well as advanced courses on health planning.

Projects financed from the Special Fund component of the United Nations Development Programme (UNDP) with WHO as executing agency were in progress in eight countries of the Region and the funds administered by WHO for these projects exceeded by 50 per cent. the total amount of regular funds available for other country programmes in the Region.

Communicable Diseases

The expansion of international travel, including tourism and the movement of labour, and the widening scale of food imports have been responsible for a deterioration in the epidemiological situation. The decline in the notified incidence of a number of communicable diseases in recent years and the availability of effective chemoprophylactic and chemotherapeutic agents appear, moreover, to have led to a relaxation in the vaccination programmes required to maintain population immunity at a satisfactory level.

In 1970 isolated imported cases of smallpox occurred in Denmark and Norway, while in the Federal Republic of Germany one imported case gave rise to 19 further cases with four deaths. It seems clear, therefore, that immunization, particularly of populations at risk, must be maintained for many years to come. Cholera appeared in five countries: Czechoslovakia, Turkey, the Union of Soviet Socialist Republics and, as single cases only, in France and the United Kingdom. The Organization continued to promote the exercise of vigilance through national and international communicable disease surveillance programmes, and to assist countries, on request, in initiating or expanding surveillance activities.

The increase in the incidence of food-borne infections and intoxications in the Region during the last decade was discussed at a seminar on food hygiene held in Warsaw in August (see page 151).

A working group met in Copenhagen in June to discuss methods developed through recent studies for the epidemiological, technical and operational evaluation of tuberculosis control activities, and the possibility of applying them in countries with long-standing control programmes. A technical meeting was held in Zagreb in September to discuss the difficulties of tuberculosis control and the surveillance of patients in rural areas with dispersed populations. Advice was given to the Federal Republic of Germany on a study of the effectiveness of the tuberculosis control programme in Schleswig-Holstein.

The United Nations Development Programme has terminated its assistance to the national trachoma programmes in Algeria and Morocco but WHO has continued to provide advice to the Governments of both countries. A meeting was held in Copenhagen in December to consider the results of the study of methods for the early detection of potentially blinding eye conditions, which was carried out in nine countries and completed during the year.

With regard to malaria eradication, Italy and the Netherlands, where originally malarious areas are in the maintenance phase, have been included in the WHO official register of areas where the eradication of malaria has been achieved. There were three WHO-assisted antimalaria programmes in operation in the Region during the year. In Turkey, 96 per cent. of the population of the country were living in areas in the consolidation phase and the population in attack-phase areas amounted to only about one million. Algeria was in the second year of its eradication programme. Areas with a population of about half a million were in the attack phase, and two departments with over 1.4 million population in the preparatory phase. The Organization assisted in the training of national staff at the malaria eradication training centre in Algiers, which has been integrated in the malaria eradication programme. Morocco was undertaking extensive antimalaria measures, and the Government has given priority to establishing the

COMMUNITY WATER SUPPLY

In Africa, millions of people still draw water for drinking and all domestic uses from natural, usually polluted, water-holes and streams (picture below) and carry it for long distances. In a community water supply project assisted by UNICEF and WHO in the Kisumu area of Kenya, water sources are protected, and simple tanks, pumping machinery and piping are used to bring safe water to the towns and villages. Much of the labour is provided voluntarily by the local people.





WATER POLLUTION

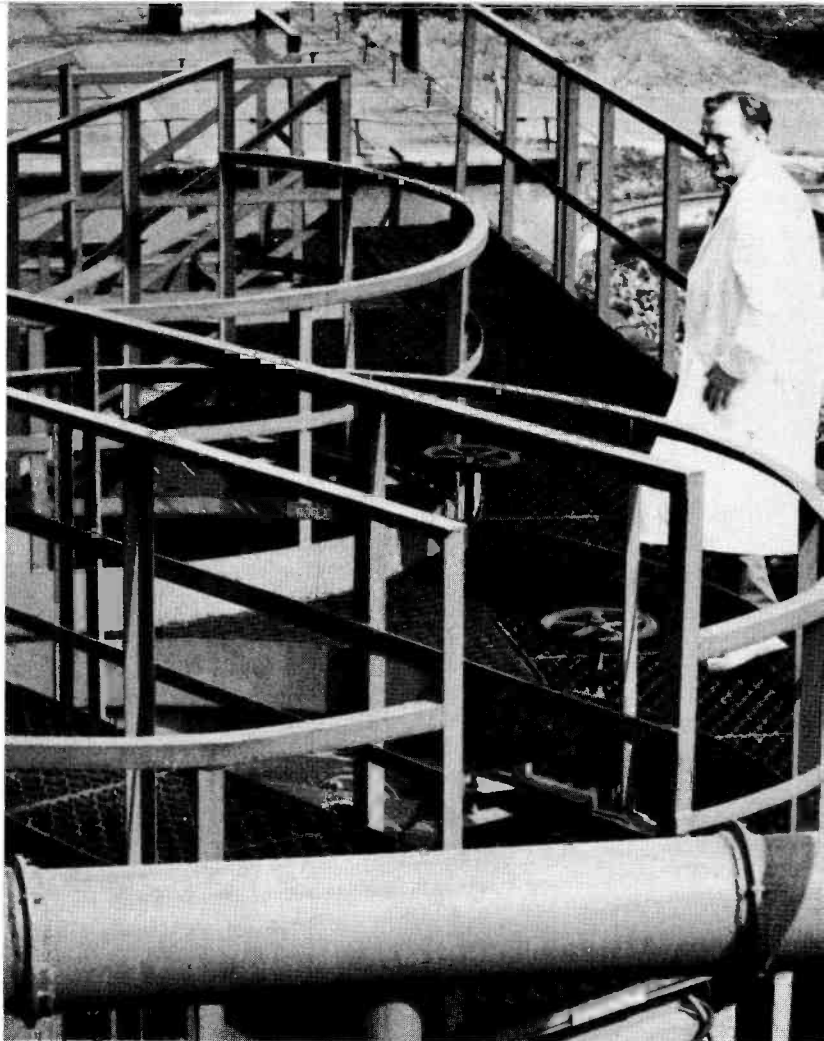
For the past five years WHO has been the executing agency for a large-scale UNDP/SF project to protect Polish rivers against pollution by industrial and municipal wastes, saline drainage from mines and cooling water from thermal power plants.

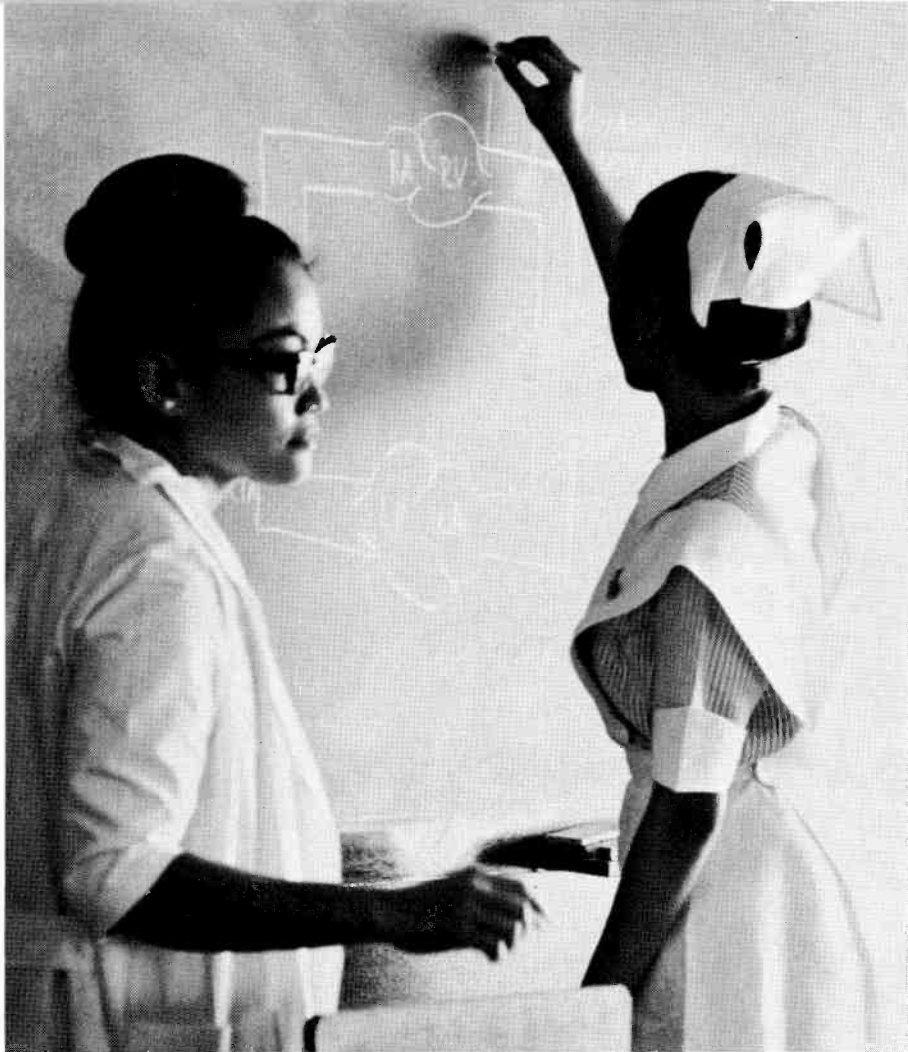
1. Foam accumulates on a river carrying wastes from a highly industrialized area.

2. The Klimzowiec pilot plant for the combined treatment of domestic sewage and industrial wastes.

3. Automatic monitoring stations provide information to a central computer on types and degrees of pollution.

2





NURSING

WHO assistance in nursing is directed principally to education and training at all levels, from auxiliary nursing personnel to university graduates.

Left: In the Philippines a former WHO Fellow gives instruction to nurses.

Below: Home visiting is part of the nurse's work.



rural health services necessary to support the programme.

In spite of the influx of several thousand malaria cases into European countries, no renewal of transmission was reported except in two limited areas in Turkey which were in the consolidation phase and where emergency measures were taken to eliminate infection. After 1970, UNICEF will phase out its assistance to the malaria eradication programme in Turkey but will assist in the development of public health services, thereby providing indirect help to antimalaria operations.

A meeting of the committee for the co-ordination of malaria eradication activities in Algeria, Morocco and Tunisia was held at Tunis in January.

Non-communicable Diseases

1970 was the third year of the first phase of the intensified cardiovascular diseases programme. In close co-operation with the International Society of Cardiology and the European Society of Cardiology, it continued to concentrate on ischaemic heart disease. Thirteen ischaemic heart disease registers have been set up in 12 countries of the Region and co-operation with national authorities has been steadily developed. The registers have already proved valuable in meeting the needs of various public health authorities and of scientists for information on the natural history of myocardial infarction as well as its impact on the community. The registers also constitute an essential basis for studies on sudden death and on the role of mobile coronary care units, and for the evaluation of the long-term results of rehabilitation of patients with myocardial infarction.

At the fourth working group on the establishment of ischaemic heart disease registers, held in Copenhagen in June, an analysis was carried out of the preliminary results obtained and an assessment made of progress, co-ordination and means of communication. It appears probable that ischaemic heart disease registers will develop into nuclei around which community cardiovascular disease control programmes will be organized in future.

Several European countries have expressed interest in starting multifactor trials for the prevention of ischaemic heart disease and, in this field too, it is expected that advantage can be taken of the data collected by the ischaemic heart disease registers. The methodological problems linked with these trials were studied and the possibilities of international co-operation were explored by a working group that met in Rome in November.

A working group was convened jointly by WHO and the European Society of Cardiology in Copenhagen in February to propose minimum standards for the postgraduate training of cardiologists in Europe. A manual on the teaching of the epidemiology of cardiovascular diseases has been distributed for use in the three courses in London, Brussels and Czechoslovakia where this training is given, as well as to schools of public health.

The role of mobile coronary care units was reviewed by a working group which met in Moscow in February. It proposed studies, which have since been commenced, to evaluate the contribution of these units to coronary care and to find means of reducing the high mortality among myocardial infarction patients in the first hours after attack.

A *Manual on Intensive Coronary Care* was produced for distribution to Member States and persons officially or professionally concerned with cardiovascular diseases (see page 49).

In pursuance of the study to evaluate the rehabilitation programmes for sufferers from cardiovascular disease, a meeting was held in Copenhagen in February to prepare a protocol and record forms; their usefulness was subsequently tested at nine centres on patients with myocardial infarction. The result of this study was discussed at another meeting at Bordeaux, France, in October, and recommendations were made for further action. A review was undertaken of facilities in the Region for training doctors and paramedical staff in cardiac rehabilitation, and assistance was provided in the preparation of national programmes in this field. A third course on physiological methods of assessing the working capacity of cardiac patients was held in Russian in Sofia in October and November.

Emphasis has been laid on the education and training aspects of the cardiovascular diseases programme, and about 200 fellowships have been awarded during the first three years of its operation. Exchanges of scientific workers have also been arranged.

A working group that met in Copenhagen in July evaluated the progress of the regional cardiovascular diseases programme since its inception in 1968, and made proposals for its development during the period 1973-1977.

A meeting on the prevention and treatment of cerebrovascular diseases and rehabilitation of patients was held in Monaco (see page 50).

The study on chronic rheumatoid arthritis, begun in 1966, was completed at the end of 1970 (see page 237). WHO has co-operated with five European centres in the study of diagnostic criteria, and the results were assessed by a working group that met in

Manchester, England, in November. The group also made proposals for the future work of these centres.

In the continuing study on medical certification of causes of death, certain areas were selected for the collection of information to be analysed by a working group in June 1971.

Fellowships were awarded in the field of cancer.

Environmental Health

In implementing the long-term programme for the control of environmental pollution which was approved by the Regional Committee in 1969, special attention was paid in 1970 to water pollution. Three studies were begun—on the health hazards arising from the persistence of certain substances in water, on analytical methods in water pollution control, and on the improvement of sampling programmes. A second preparatory meeting was held in Paris in July to plan for the conference on accidental water pollution to be convened in 1971 in co-operation with the Council of Europe, the Council for Mutual Economic Assistance, ECE, FAO, UNESCO and WHO. WHO also assisted a seminar on water pollution by oil, held at Aviemore, Scotland, in May.

The second course in Russian for sanitary engineers started in Warsaw in November and will continue until July 1971. Assistance in the form of lectures was given to international courses in sanitary engineering at Delft, Netherlands, and fellowships were awarded to Algerian and Moroccan candidates for undergraduate and postgraduate studies at the newly established inter-regional training centre in sanitary engineering at Rabat, Morocco. Training was also part of the activities of environmental sanitation projects in Algeria, Morocco and Turkey.

A revised edition of *European Standards for Drinking-Water* was prepared (see page 56).

WHO is the executing agency for environmental sanitation projects financed from the Special Fund component of the United Nations Development Programme in seven countries of the Region. In January, the Governing Council of UNDP approved two projects in the Region for financing from the Special Fund—for water pollution control in Romania and for the setting-up of a federal research and development centre for environmental pollution control in Czechoslovakia.

The plan of operation for the latter was signed in May. In Poland, a project for the protection of rivers against pollution was in its fifth year (see page 53). Pre-investment surveys have begun for a project in Algeria covering water supply and the establishment of a national water authority. A water supply and

sewerage project was proceeding in Istanbul, Turkey, and another, in Morocco, was in its second phase.

In Malta, a similar project for wastes disposal and water supply, which started in 1967, was in its final year, and certain immediate measures proposed had been implemented. Studies were undertaken in hydrology and hydrogeology, on the reclamation of wastewater effluents, liquid and solid wastes disposal, and detection of leaks in the water supply system. FAO assisted in additional studies on the agricultural aspects of waste-water utilization.

Advice was given to Greece, Hungary and Yugoslavia on the preparation of requests for similar assistance from the Special Fund component of UNDP.

Emergency assistance was provided to Turkey and Yugoslavia in connexion with earthquake disasters, and to Romania in connexion with catastrophic floods.

Organization of Health Services

A meeting held in February to explore ways and means of applying operational research techniques in health services continued the work begun at the seminar on the same subject in 1969. The need for a training programme in this field for public health administrators was stressed.

The use of computers in medicine and public health was the topic of a meeting held in Bratislava in February with participants from the Region of the Americas as well as from the European Region (see page 237).

An advanced training course in English on health planning was held in October and November in Moscow.

Advice on the organization of public health institutes was given to Algeria, Bulgaria and Romania. A study was initiated on the role of central institutes of public health and hygiene. Advice was given to the Government of Malta on the establishment of an epidemiology and health statistics unit.

Postgraduate courses on hospital and medical services administration are being given concurrently in English and Russian at the Central Institute for Advanced Medical Education, Moscow. The Organization awarded fellowships and provided visiting lecturers. The course in English is designed for candidates from other Regions.

A two-week seminar in French on public health practice was held in Bulgaria in October. It was intended for senior public health officers, particularly those engaged in provincial and city health services.

A study on training in hospital administration was carried out in co-operation with the European Asso-

ciation of Training Programmes in Hospital and Health Services Administration. Information has been collected on training requirements for hospital administrators, on grades of staff and on the type of recognition given to students after completion of training.

The role of the primary physician and his functions in relation to other members of the health team were the main subjects of discussion at a conference held in Noordwijk, Netherlands, in June (see page 152). Emphasis was placed on maternal and child health and the psychiatric and geriatric role of the primary physician.

A working group met in Florence, Italy, in November to consider the problems of education and training in long-term care, including geriatrics.

A study was made of methods to evaluate the efficiency of medical care and to assess effectiveness against cost, both matters of serious concern to most European countries.

Activities in the field of road accident prevention and control were carried out in close co-operation with various agencies active in this field.

The first phase of a study on nursing resources and staffing patterns was carried out, and its findings were discussed by a working group on European trends in nursing services which met in Berne in December. A French-language course on teaching methods for nurse educators was held in July at the International School of Advanced Nursing Education at Lyons, France, originally established with WHO assistance.

Advice was given to Italy, Romania and Turkey on the training of nurses and midwives. The project for the development of mental health services in Malta included the training of nurses and nurse tutors. The WHO-assisted study of the functions of nursing personnel in Switzerland is described on page 151.

The Organization participated in meetings on health education arranged by the International Union for Health Education, in Dubrovnik, Yugoslavia, and the United Kingdom's Central Council for Health Education, in Manchester, as well as in the Second International Seminar on Health Education, in Höhenried, Federal Republic of Germany. The regional programme in this field takes into account the health education aspects of programmes in cardiovascular diseases, nutrition and other subjects.

Health Protection and Promotion

Joint activities with UNICEF in the field of nutrition included the evaluation of a nutrition programme in Spain and a seminar on the teaching of nutrition in Mediterranean countries, held in Turkey in December.

FAO participated in both these activities. The weaning food programmes in Algeria, Morocco and Turkey are progressing satisfactorily, and a WHO-assisted seminar on protein problems associated with weaning foods was held in Algiers in October.

A conference on postgraduate dental education was held in London in April with the participation of deans of dental schools, directors and teachers of postgraduate dental training institutes, and health administrators in dentistry (see page 236). Among the topics discussed were the purpose, planning and evaluation of postgraduate dental education in Europe and the educational methods employed.

A survey on child dental health in Europe was carried out as a follow-up of the pilot study undertaken in six European countries in 1964. This wider survey was planned at a meeting held in Oslo in February.

In June, a conference on the training of personnel for psychiatric services was held at Izmir, Turkey, to discuss the selection of nursing and paramedical staff and the methods and content of their training as members of a multidisciplinary psychiatric team. Panel discussions took place with the participation of student representatives of different professions and of persons concerned with the special problems of psychiatric services for the elderly, and for children and adolescents.

In support of the preliminary programme for intensifying activities in the fields of mental health of adolescents and young persons, and abuse of psychotropic drugs, a classification of mental health service activities is being made with the co-operation of 18 Member States. Efforts have been made to establish uniform terminology and criteria to be used by the co-operating countries, and to obtain comparable data on standardized forms.

A working group on the abuse of psychotropic drugs met in Geneva (see page 238). Information was collected in several countries and from other agencies active in this field to provide the background for the detailed long-term programme for the period 1972-1976.

Contributions from the Federal Republic of Germany to the Voluntary Fund for Health Promotion made it possible to hold meetings of two working groups: one at Lindau, in September, on methodology of psychiatric outpatient data collection; the other at Düsseldorf, in November, on the classification of mental health service activities (see page 238).

Advice was given to the Netherlands on the extension of a national programme for the collection of statistical data on mental health.

The organizational patterns of occupational health services were considered by a working group that met in Moscow in May, and the study on the teaching of occupational health and safety in Europe was continued in collaboration with ILO. The aim is to assist in improving curricula and teaching standards in this subject.

A second inter-regional course on the quality control of drugs was held in Copenhagen in April (see page 272).

Education and Training

Attention was paid to the evaluation of activities in education and training. An analysis was made of the fellowships programme, including the facilities provided for the increasing number of fellows from other Regions studying in Europe. Inter-country education and training activities were critically reviewed and recommendations were made for special activities in the field of teacher training. WHO and UNICEF co-operated in an evaluation of education and training projects in Turkey assisted by both organizations.

Evaluations were also made of educational activities at the national level. The Federal Republic of Germany and Switzerland requested advice on planned reforms of their medical education system. The Organization provided lecturers for meetings on medical education held in Bulgaria and Morocco in November.

At a seminar on modern teaching methods in medicine held in Madrid in April (see page 153), emphasis was placed on the need to reform traditional medical education to meet the challenge of recent technological advances.

At the request of the Algerian Government, WHO assisted in revising the training programme for medical assistants in Algeria.

Co-operation with other Organizations

Inter-organizational and inter-agency co-operation has been intensified at all stages of the work of the Organization in the Region. In the development of country programmes, co-operation with UNDP, FAO and the World Food Programme has become closer. Though UNICEF is withdrawing its assistance to malaria programmes, co-operation with that body has been strengthened in other fields. In several programmes the Organization co-operates at the regional level with the United Nations, ILO, UNESCO, IAEA and ECA. Contacts with the Council of Europe, ECE and the Council for Mutual Economic Assistance have developed further in connexion with the long-

term programmes on environmental pollution control and mental health. Co-operation with non-governmental organizations is an essential element in the development of these two programmes and of that on cardiovascular diseases.

The Regional Committee

The twentieth session of the Regional Committee for Europe was held in Malta from 22 to 26 September 1970. All the Member States of the Region were represented with the exception of Iceland. UNICEF, UNDP, the Council of Europe, the International Committee of Military Medicine and Pharmacy, and eleven international non-governmental and other interested organizations were represented. The Director-General attended the session.

The Regional Committee expressed satisfaction that efforts were increasingly concentrated on a few programmes of concern to all the countries of the Region. It also indicated its appreciation of the work done under the long-term programmes in fields of wide application such as epidemiology and statistics, education and training, standardization of nomenclature, and rehabilitation.

Priorities for the Organization's fifth general programme of work for the period 1973-1977 were discussed. In addition to the three fields of cardiovascular diseases, mental health and environmental pollution, in which long-term programmes had already been established or were being considered, the Committee felt it would be justified to undertake long-term programmes in health planning, organization of medical care and education and training.

The Committee expressed appreciation of the document on comparative geographical pathology that had been prepared at its request, and asked the Regional Director to continue this work with the aim of preparing an atlas showing the occurrence of various diseases in the European Region.

Progress reports on the implementation of the long-term programmes on cardiovascular diseases and environmental pollution control were considered. The Committee approved in principle a proposal for the continuation of the former programme beyond 1972 and its extension to include cardiovascular diseases other than ischaemic heart disease. It also gave its approval in principle to an intensified long-term programme in the field of mental health, with special emphasis on adolescents and young persons and the abuse of drugs.

The proposed programme and budget estimates for the Region for 1972 were approved for transmission to the Director-General.

The subject of the technical discussions was "Public health aspects of rehabilitation". The Committee confirmed the selection of "Prevention and control of drug addiction" as the subject for the technical discussions at its twenty-first session, and decided on "The public health problems posed by organ transplantation" as the subject for the technical discussions at its twenty-second session.

The Committee confirmed its acceptance of the invitation of the Government of Spain to hold its twenty-first session in Madrid in 1971. It also accepted an invitation from the Government of Denmark to hold its twenty-second session at the regional headquarters in 1972, when it is expected that the Committee will be able to meet for the first time in the new extension of the Regional Office building.

Some Aspects of Work in the Region

A list of the projects current during the year will be found in Part III. The following have been selected for fuller description.

Study of the Functions of Nursing Personnel, Switzerland

In view of the heavy demands made on nursing services and the current shortage of nursing staff, a WHO-assisted study of the functions of nursing personnel was started in Switzerland in 1965. The aim was to determine the responsibilities and differentiate the functions of the various categories of nurses required by the health services and to see whether the most efficient use was being made of existing nursing resources.

A WHO nursing research consultant took part in the study, which was sponsored by the Federal Public Health Service, the Swiss Red Cross and the Swiss Association of Qualified Nurses. An advisory committee was set up, consisting of representatives of the Conference of Cantonal Health Directors and the Swiss Association of Establishments for the Sick, as well as members of the nursing and medical professions. It also included a lay member to give the point of view of the consumer.

The points investigated included: the duties currently performed by nursing personnel in hospitals; the proportion of their time spent with patients; the distribution of their time on nursing and other activities; the extent to which the different categories of nurses were engaged on tasks corresponding to their level of training; and the amount of direct nursing care received by the average patient.

Variable factors influencing the work-load of nursing staff were taken into account, including the nature or type of hospital (for acute or for chronic illness), its location (urban or rural), and its size classified according to the number of beds. The findings of the study were based on a stratified random sample of the country's hospitals, covering both short-term and long-term urban and rural hospitals of various sizes. Five

university-affiliated hospitals were included in the investigation, but psychiatric hospitals, sanatoria, rehabilitation centres and similar specialized institutions were omitted.

The sample covered 24 hospitals in 11 cantons, from which 58 service units providing various types of care were selected at random. Nursing activities in progress were recorded by observers using a work-sampling technique based on criteria established by a group of about 100 nurses from all parts of the country. Eighteen senior nurses from schools of nursing and hospital nursing services were recruited to conduct the investigation and given special training for the purpose. They then trained and supervised the 183 observers employed for the collection of data. They also had the task of explaining the aims of the study to the staff of the various hospitals concerned.

A report¹ on the organization, administration and findings of the first phase of the study, completed in 1969, was published in English, French and German so that the methods adopted might serve for similar research elsewhere. It appears from the report that nursing resources were not being used to the best advantage and, in particular, that more time needed to be devoted to direct patient care. Final recommendations must, however, await the results of the second phase of the project, started in 1970 and consisting of an investigation of existing nursing resources and needs with a view to forecasting training and staffing requirements.

Seminar on Food Hygiene

Despite the great progress made in techniques for the control of bacterial, viral and parasitic infections over the last few decades, the available data show that the incidence of food-borne infections and intoxi-

¹ Exchaquet, N.F., Maillart, V. & Christensen, M. H. (1969) *A study of nurse utilization in Switzerland*, Berne, Etude des soins infirmiers en Suisse.

cations is steadily increasing in the European Region. This situation appears to be due to such factors as: increased travel and the development of international trade in foodstuffs and animal feeds; new methods of food production, processing and distribution; and changing patterns of food consumption. A seminar with participants from 30 countries in the Region was convened by WHO in Warsaw, in August 1970, to discuss ways of controlling salmonellosis and other food-borne diseases of particular concern to the tourist trade and the food production industry.

The participants agreed that there had been an absolute increase in the incidence of food-borne infections and intoxications in the Region during the previous 10 years. The epidemiological situation was still unclear, however, as reporting was erratic in many countries. It was therefore noted with satisfaction that the WHO programme for the surveillance of salmonellosis in Europe, which was started in 1967, was being extended to cover shigellosis and other food-borne diseases.

Two types of food-borne diseases are of particular concern to the tourist trade: the enteric infections or intoxications of known etiology, such as salmonellosis, shigellosis and staphylococcal intoxication; and "tourist diarrhoea", a disease of undetermined etiology that seems to be responsible for more than 50 per cent. of all enteric disorders occurring in tourists, though it is less serious than the food-borne diseases of known etiology. While the participants agreed that tourist countries should pay particular attention to food hygiene and to ensuring that there are adequate water supply and sewage disposal facilities for the vastly increased population in the tourist season, it was pointed out that many tourists were inclined to be careless as regards eating and drinking and casual about matters of hygiene.

It was emphasized that a special effort should be made in all branches of the food industry to employ efficient methods of sampling and microbiological analysis in order to determine sources of microbial contamination and bring to light faulty working procedures that are liable to spread contamination and promote microbial growth.

The seminar agreed that instruction on food production, processing and distribution, food microbiology and food poisoning should be given greater prominence in the medical curriculum. The majority of the participants considered that the routine stool examination of people handling and processing food was not of sufficient value in the prevention of food-borne diseases to justify the time and expense involved. Food-handling personnel in general should be more adequately supervised and given intensive training in food hygiene; the toilet facilities in all establishments

for food production and distribution should be of the highest standard and maintained in good condition at all times.

The need for national and international legislation designed to promote international trade in food and to protect consumers was recognized. Special consideration was given to the joint FAO/WHO food standards programme under which a set of food standards, known as the Codex Alimentarius, is being drawn up. It was emphasized that the success of this programme depended on the willingness of governments to accept the Codex standards.

Conference on the Role of the Primary Physician in the Health Services

A conference on the role of the primary physician in the health services was organized by WHO in June 1970 at Noordwijk, Netherlands, with the aim of reviewing the role and functions of the physicians who have the first contacts with patients—for example, general practitioners and physicians working in polyclinics—in the light of the changing needs and demands of society. It was attended by public health administrators, general practitioners, representatives of professional associations, nurses and social workers from countries of the European Region, as well as by representatives of the United Nations, the World Medical Association and the International Social Security Association.

The working methods of the primary physician and his relationship with the other members of the health team and with the hospital and the general public health services were among the points considered.

It was stressed that one of the difficulties encountered by the primary physician is that of having to take into account not only the demands of the individual patient, but also those of the community as represented by its public health policy. It was generally agreed that, as well as being equipped for his fundamental role in diagnosis and treatment, the primary physician should be thoroughly familiar with all aspects of community medicine so that he can guide his patients through the maze of public health services and specialists.

It was thought that, in some countries, a closer relationship between the primary physician and the hospital would be desirable. The tendency in Europe to entrust the public health physician with a variety of public health tasks was noted.

The conference also discussed the trend towards replacing individual practice by group or team practice. It was felt that group practice offered many advantages, but that there were still a number of obstacles to its general introduction, notably the difficulty of achieving communication, confidence and team-

work within the group. It was considered that it might be possible to overcome this difficulty by giving medical students experience of teamwork.

The question of primary general practice as a specialty in its own right was also discussed, and it was emphasized that the status of general practice would be improved from the moment it was taught as such. Every medical student should, at some stage of his studies, be given an idea of what general practice meant and should learn to respect it. In this way he might be encouraged to devote himself to general practice rather than become a specialist in the more usually accepted sense of the word.

Seminar on Modern Medical Teaching Methods

The validity of traditional teaching methods is being questioned in most branches of learning and, as a result, new approaches to medical education are being tried out in many countries. At a WHO seminar on modern medical teaching methods, held in Madrid in April 1970, experts from 28 European countries met to study the most recent advances in techniques of modern research on the learning process.

The participants considered that medical curricula need to be more flexible and should be continually reviewed in the light of accumulated experience. Because knowledge in medicine and allied sciences is expanding fast, the student should be encouraged to develop habits of self-education that will enable him to deal with new or unfamiliar problems and to continue learning all his life.

Teachers should make greater use of the wide range of educational tools now available, such as tapes synchronized with slides, television and videotape, teaching machines, computers and electronic devices simulating laboratory and clinical situations. If properly used, such material can free the teacher from the more repetitive aspects of his task.

The use of mechanical aids does not, as might be feared, make learning an even more passive process than it was under the traditional lecture system. On the contrary, it encourages the active involvement of

the student in the subjects and techniques he has to learn. This is done by repeatedly asking him questions or setting him problems; at the same time, he can immediately find out whether he has answered the questions or solved the problems correctly. In this way, he has the "feedback" necessary for effective learning.

The seminar emphasized that the use of modern teaching aids must be accompanied by a reassessment of the aims and content of medical instruction. Technically sophisticated teaching methods are of little value if they are used merely to impart out-of-date or irrelevant subject matter.

The active involvement of the student in the learning process may also be achieved by means of regular meetings between a teacher and a small group of students for informal discussions. This system of instruction encourages free communication not only between teacher and students, but among the students themselves, thus promoting "peer learning". It is also helpful to the teacher in the evaluation of individual students.

There is no doubt that a medical teacher should be thoroughly acquainted with medicine, and this is the usual criterion applied in selecting staff for medical schools. It is, however, often forgotten that he should also be a competent instructor, trained in the basic principles of education. The participants at the seminar thought that more attention should be paid to the provision of experts in medical-teacher training at the local, national and regional levels and to the development of resources for research into medical education.

Another topic discussed at the seminar was the extent to which students should be encouraged to start specializing in a particular branch of medicine during the undergraduate course. It was considered that "early orientation"—which gives the student the opportunity of becoming familiar with different branches of medicine before choosing a specialty—effectively combined the advantages of early specialization and the system of specializing only after graduation.

EASTERN MEDITERRANEAN REGION

WHO assistance in the Eastern Mediterranean Region continued to aim mainly at control and eradication of communicable diseases, education and training of health manpower, and strengthening of basic health services. Most countries of the Region now have long-term health plans which serve as a basis for orientation of WHO assistance and determination of priorities in health fields. Epidemiological surveillance and education and training continued to receive increasing attention as further outlined below.

Communicable Diseases

As a result of the inclusion of Afghanistan in the Region in 1969, the total population was increased to 285 million and that in originally malarious areas to 230 million. Although the population of 55 million representing the difference between these figures is considered to be free from malaria risk, particularly in Afghanistan, Ethiopia, Saudi Arabia, Tunisia and Yemen, this cannot be confirmed without a more detailed delimitation of malarious areas. During 1970, further areas in Pakistan were reported free from malaria; areas which have reached the maintenance phase now include 11 million, or 5 per cent. of the total population at risk. No resurgence of malaria has been observed in these areas. The population protected by malaria eradication programmes in the Region at the end of 1970, including areas in the maintenance phase, was 172.6 million, or 75 per cent. of the total at risk.

Large-scale control programmes were in operation in areas populated by 25.7 million, or 10.9 per cent. of those at risk, while antimalaria drugs and diagnostic services were available to a population of 15.9 million, or 6.9 per cent. About 16.4 million, or 7.1 per cent., were not yet protected by specific antimalaria measures. This figure includes 7.4 million in Ethiopia, 1.6 million in Saudi Arabia and 3.6 million in Sudan, countries partially covered by malaria eradication or pre-eradication programmes. It also includes a population of 3.1 million in the People's Democratic Republic of Yemen, the Trucial States and Yemen, where plans were being made to establish malaria control projects. This leaves a population of

0.7 million in areas where no plans have been made either for eradication or for control of malaria, i.e., 0.3 per cent. of the total population at risk.

Reviews of malaria eradication programmes were conducted in Afghanistan with the assistance of UNICEF and WHO and in Ethiopia and West Pakistan with assistance from the United States Agency for International Development (AID) and WHO. In Afghanistan, the review team stressed the importance of protecting the gains already made by improvements in administration and tighter supervision of operations. It pointed out that it would be dangerous, on epidemiological grounds, to withdraw the protective measures being applied, and stressed the importance of the early development of rural health services. In Ethiopia, the technical, financial and administrative problems encountered made it difficult to continue a malaria eradication campaign throughout the whole country. Studies were conducted to devise the best and most economical ways to obtain effective control of malaria, while at the same time maintaining the gains achieved in the past few years by large-scale operations.

A description of the malaria eradication programme in Tunisia will be found on page 162.

The resistance of the local vector to DDT had presented problems in the past in some of the malaria eradication programmes in the Region. This insecticide has therefore been replaced by dieldrin in Syria and by malathion in the south of Iraq, with encouraging results in both countries despite the heavy floods which largely disrupted village life in the latter. In Iran, the change to malathion and combined attack measures suited to local conditions have also shown very promising results. However, all insecticides available as alternatives to DDT are in fact more costly and often require more than one round of application to maintain their efficacy during the whole of the transmission season. Where insecticide changes have been made, the cost of malaria eradication to the governments concerned has increased.

In West Pakistan, the problem of urban malaria, particularly in Karachi, still remains to be solved despite the considerable effort made by the Vector Control Board and the contribution of the malaria

eradication programme. The vector, *Anopheles stephensi*, is resistant to DDT and the continued use of this insecticide cannot be expected to lead to interruption of transmission. The presence of a large number of cases imported mainly from Karachi and of a partially resistant vector, *A. culicifacies*, has made it increasingly difficult to prevent the resumption of transmission even in areas where the indigenous malaria case-load had already been reduced to a negligible level. Some consolidation areas have consequently had to revert to the attack phase. In East Pakistan, along the borders with Assam, a certain amount of indigenous transmission still occurs, although many of the detected cases are imported. Large-scale entomological investigations are being carried out to discover the causes of persisting transmission and the role of secondary vectors, if any.

In the northern region of Afghanistan, transmission has persisted over the last few years owing to technical and operational factors.

During 1970, changes were made in the form of assistance provided by the Organization, some reduction of advisory staff being offset by an increase in the provision of supplies and equipment. This was possible as a result of the increasing ability of national staff to carry on with less advisory assistance from WHO. The malaria eradication training centres, in particular, have achieved a much closer co-ordination than before with the relevant malaria eradication or control programmes.

The financing of malaria eradication programmes has remained one of the greatest difficulties facing governments, particularly since less assistance has been provided from outside sources. In 1970, for example, there was a reduction of about 33 per cent. in UNICEF contributions to malaria eradication as compared with 1969, and a further reduction has been proposed for 1971. AID provided assistance in the form of loans to Ethiopia, Jordan and Pakistan.

Inter-country meetings to discuss common malaria problems were held during the year between Afghanistan and Iran; Iraq, Jordan, Lebanon, Syria and Turkey; Burma, India and Pakistan; and Algeria, Morocco and Tunisia. The North African malaria co-ordination committee met in January in Tunis, and a meeting of health officials of Iran and Afghanistan was held in February for the first time since the commencement of the malaria eradication programmes in those countries. Such meetings have furthered the exchange of information, strengthened the co-ordination of operations in border areas and, in general, increased the understanding of the malaria problem in the countries concerned.

One of the public health problems in the Eastern Mediterranean Region has been the recent reappear-

ance of cholera. Several meetings have been held to co-ordinate action against the disease. One, sponsored by WHO and held in Teheran in March 1970, was attended by representatives at ministerial level from Afghanistan, Iran, Kuwait, Pakistan, Saudi Arabia and Turkey. They recommended strict observance of the measures described in the International Sanitary Regulations¹ and avoidance of restrictive measures unless mutually agreed upon by the countries concerned. They also emphasized the need for co-operation between neighbouring countries, particularly in connexion with gatherings of pilgrims.

Two meetings were held in August to discuss preventive measures: the Ministers of Health of the People's Democratic Republic of Yemen, and of Yemen met in Aden, and the Minister of Health of Syria convened a meeting in Damascus of the Ministers of Health of Iraq, Jordan, Kuwait, Lebanon, Saudi Arabia and the United Arab Republic. The latter meeting agreed on the necessity both of prompt notification to WHO of the first suspected case of cholera and its confirmation or otherwise by laboratory examination, and of providing information on the measures taken in infected countries so that control measures might be co-ordinated. The meeting also recommended mass vaccination in the seven countries represented.

WHO provided assistance to Cyprus, Jordan, Lebanon, Libya, Saudi Arabia, Syria and Tunisia in organizing preventive measures against cholera. It dispatched vaccine donated by the United Arab Republic to various countries in the Region, and also supplied diagnostic sera, culture media, rehydration fluid with disposable equipment, jet injectors and antibiotics.

The national tuberculosis programmes in a number of countries were integrated with the basic health services, and specialized tuberculosis control institutions were retained only for the district or provincial level and above. In others, the specialized component was particularly pronounced. In all tuberculosis projects paramedical and auxiliary personnel were given training and orientation. General health workers were trained in tuberculosis control techniques in Ethiopia and Pakistan. UNICEF provided material assistance for training activities in a number of projects.

The method of direct BCG vaccination has been generally adopted in campaigns in the Region. Simultaneous BCG and smallpox vaccination campaigns were carried out in the People's Democratic Republic of Yemen and in Sudan. Basic health services

¹ The International Sanitary Regulations remained in effect during 1970. On 1 January 1971 they were replaced by the new International Health Regulations approved by the Twenty-second World Health Assembly.

took over the permanent responsibility for BCG vaccination in Afghanistan and Ethiopia. In Jordan, Libya, Pakistan, Saudi Arabia, Somalia and Syria the gradual integration of general or local mass BCG campaigns was envisaged. In Libya, BCG vaccination of the newborn and of infants was made compulsory and vaccinators were given intensive training.

Basic health services in Afghanistan, Ethiopia and Pakistan undertook a large part of responsibility for the examination of sputum specimens by direct microscopy. Elsewhere, diagnostic activities were mainly concentrated in the specialized tuberculosis services.

Ambulatory treatment provided through basic health services is gradually being expanded in Afghanistan, Ethiopia and Pakistan; elsewhere it is still the responsibility of specialized tuberculosis services. In treatment centres, the problem of defaulters remains serious. Thioacetazone in combination with isoniazid is accepted as the treatment of choice in several countries; so far no undue incidence of side-effects has been reported. In Libya, a controlled trial of thioacetazone is being carried out among hospitalized patients to study side-effects. The existing facilities for institutional treatment of tuberculosis patients are increasingly being used for short-term intensive treatment. In Ethiopia, this practice is part of official policy. WHO assisted Jordan, the People's Democratic Republic of Yemen, Syria and Yemen in evaluating the tuberculosis situation and planning future activities.

With regard to leprosy, WHO assisted the Governments of Sudan and Yemen in evaluating the situation and suggested control measures. In the control project in East Pakistan special efforts were made to keep contacts under surveillance; the regularity of attendance for ambulatory treatment remained unsatisfactory, although it had improved in comparison with the preceding year. The All-Africa Leprosy Rehabilitation and Training Centre in Addis Ababa was utilized by WHO fellows as a demonstration and training ground.

In 1970, over 7000 cases of smallpox were reported from those countries where the disease is still endemic. This represents an increase of more than 10 per cent. over the figure for 1969. The number of cases reported from Afghanistan, Ethiopia and Sudan showed substantial increases. In spite of efforts to contain it, the 1969 epidemic spread throughout Sudan during 1970; more than 900 cases were reported, the highest number for 15 years.

In Afghanistan, where the increase in the number of cases was largely due to more accurate reporting and better case investigation, a national reporting network is being developed. More than two million vaccinations were performed in 1970 by about 100

vaccinators, working often in very difficult terrain. Concurrent assessment of the campaign was carried out systematically, and take-rates were consistently found to be over 95 per cent.

Cases of smallpox were reported in February, during the Mecca pilgrimage period, on board a Pakistani ship on its arrival at Jeddah, Saudi Arabia. Strict quarantine measures, surveillance and vaccination activities prevented the disease from spreading to local areas of Saudi Arabia.

A WHO-assisted smallpox eradication project was started in Ethiopia towards the end of the year; reporting was considerably improved and epidemiological investigations were carried out.

All operations against smallpox in West Pakistan were unfortunately interrupted for over four months, due to the decentralization of the province into four individual provinces.

Several million doses of donated freeze-dried smallpox vaccine were provided to Sudan, where the need was most urgent, as well as to Ethiopia, Lebanon, Pakistan, the People's Democratic Republic of Yemen, Saudi Arabia, Somalia and Yemen. Countries where smallpox is not endemic were provided with medical supplies and educational material on the differential diagnosis of smallpox and chickenpox. Specimens from smallpox patients in Afghanistan, West Pakistan, Saudi Arabia and Sudan were tested in WHO reference laboratories.

Assistance was given to increase the production of freeze-dried smallpox vaccine in the Region. The Organization helped the national laboratory in East Pakistan to improve both the quantity and the quality of the vaccine produced, and provided supplies to laboratories in East Pakistan and in Syria. Batches of vaccine from East Pakistan, Ethiopia, Iran and Iraq were tested. National laboratories in Iran, Iraq and Tunisia were assisted in the repair and maintenance of freeze-drying equipment.

WHO-assisted projects for the control of communicable eye diseases were in operation in Libya, Sudan and Syria. A sample survey was completed in rural areas of the southern provinces in Libya, and a survey of the prevalence of blindness was carried out in the Blue Nile Province of Sudan. The situation in Afghanistan, the People's Democratic Republic of Yemen, and Yemen was reviewed with the aim of promoting trachoma control in highly endemic rural areas of these countries.

In preparation for the technical discussions on the problems of main zoonotic diseases in the Region at the meeting of the Regional Committee, information on the prevalence, epidemiological features and control of the major zoonoses was obtained from countries in the Region. Brucellosis, rabies, salmonellosis, bovine

tuberculosis and echinococcosis were found to be the most important. Among the topics dealt with in the discussions were the prevalence of zoonoses in man and animals, epidemiological features in man and animals with reference to conditions in which infection is acquired, occupational risks, economic implications, reporting of zoonotic diseases and measures for their prevention and control in man and animals.

The WHO inter-regional course in epidemiology and control of communicable diseases, which began in Moscow in September 1969, was continued at the High Institute of Public Health, Alexandria, United Arab Republic, from January to April 1970.

In 1970, three WHO-assisted schistosomiasis control projects were in operation in the Region. That in the United Arab Republic has been in existence since 1961, another started in Libya in July 1969, and the third in Tunisia in June 1970. Some epidemiological as well as malacological studies had previously been undertaken in Libya and Tunisia, but not on a systematic basis, and few foci had been covered. A later study showed the disease to be more widespread in these two countries than previously believed.

Following the recommendations of a meeting convened in Geneva in October 1969, a team composed of an epidemiologist and a parasitologist undertook an on-the-spot evaluation of the epidemiological methods used in the schistosomiasis project in the United Arab Republic. It attempted to establish an independent investigation, based on certain specific parameters, to find out whether or not molluscicides had been effective in controlling transmission in the project areas. Prevalence surveys were started by the team and should be completed early in 1971.

A request was made for assistance from the Special Fund component of the United Nations Development Programme in connexion with an inter-regional project for research on the epidemiology and methodology of schistosomiasis control in the Lake Nasser area, United Arab Republic, and in other man-made lakes in Africa.

Non-communicable Diseases

WHO assisted the Radiation and Isotopes Centre, Khartoum, Sudan, in establishing a cancer registry and the Cancer Institute in Cairo in developing a registration system suitable for automatic processing by computer. Assistance was provided to Iran in evaluating the available facilities for setting up a demonstration area for cancer control and to Lebanon in making a preliminary assessment of the staff and facilities available for a cancer control campaign.

Environmental Health

The first environmental health project to be financed by the Special Fund component of the United Nations Development Programme (UNDP) in the Region was started during the year. It involves a pre-investment survey of sewerage needs and facilities in Teheran, and will also cover the treatment and re-use of waste water for agricultural purposes. The total cost of the project is of the order of US \$1.7 million. WHO assisted the Government of Lebanon in preparing a request for assistance from the Special Fund component of UNDP for a national wastes disposal plan. It also assisted the Government of Syria in the preparation of a similar request.

Special Fund assistance for the water supply project for Sana'a and Hodeida, Yemen, has been approved by the Governing Council of UNDP and topographical surveys and geophysical work have been started. Requests have also been submitted for Special Fund assistance for a community water supply project in Iraq and for a master plan for water supply, sewerage and drainage in Kabul, Afghanistan.

In Ethiopia, a number of municipal water supply systems have been designed and constructed with the help of WHO. It is planned that 50 such systems will be constructed during the next three years.

In the field of community water supply, WHO encouraged governments to undertake larger water supply schemes involving whole metropolitan areas. Tunisia was assisted in initiating engineering studies, including the detailed design of water supply lines and distribution systems, and in undertaking management studies and the training of personnel for operation and maintenance services.

In Sudan, assistance was given in designing and constructing a dam at Lake Rahad to provide water to an area with a population of about 75 000 people.

At the request of the Ethiopian Government, studies were undertaken in an effort to control water pollution, and in Lebanon the specific effects of the recharge of the sewage effluents in the groundwater were investigated.

The training programme for environmental health personnel of various categories was continued at the university level in Iran and Pakistan and at the sub-professional level in nine other WHO-assisted projects.

Organization of Health Services

During the year several governments in the Region, including those of Libya and Sudan, revised their general policies with regard to health administration and health planning. Ethiopia and Saudi Arabia took further steps towards improved administration and

a more orderly development and use of resources. WHO has been closely associated with these developments.

WHO-assisted projects in public health administration are tending to become multidisciplinary, and more emphasis is being given to the health components in large-scale industrial or agricultural development projects. WHO is assisting in the Lake Nasser Development Centre, United Arab Republic, and the environmental control project in the Awash Valley, Ethiopia, both of which are supported from the Special Fund component of UNDP with FAO as the executing agency. In community and rural health projects in Afghanistan and Yemen, preventive and curative health services were extended to populations now receiving organized health care for the first time in their history. A description of local health services in Taiz, Yemen, will be found on page 161.

In co-operation with UNICEF, WHO assisted the development of health services in Ethiopia, Iran, Iraq, Pakistan, Somalia, Tunisia and the United Arab Republic. The basic health services in Somalia were further strengthened, and in Ethiopia additional assistance was provided for health services at provincial level. Basic health services in Iraq and the United Arab Republic were assessed and evaluated with WHO assistance; both countries were found to have expanded the coverage and improved the quality of rural health services.

WHO has continued its assistance to a number of health institutes in training paramedical and auxiliary personnel, and has helped to develop others such as the Health Centre and Manpower Institute in Sana'a, Yemen, and the new Institute for Health Manpower Development at the Al Joumhouria Hospital, People's Democratic Republic of Yemen. For both these projects, requests have been submitted for assistance from the Special Fund component of UNDP, and pre-project allocations have been made to enable activities to be started. Another request has been presented for Special Fund assistance to Iraq for comprehensive basic health services training.

WHO assisted the Governments of Iran, Lebanon and the United Arab Republic in developing their services for the rehabilitation of the physically handicapped. Iran and Kuwait were assisted in implementing and evaluating their medical rehabilitation programmes. The sixth inter-regional course on medical rehabilitation was held in Beirut from November 1969 to April 1970. It was intended for qualified physicians with at least two years' experience in medical rehabilitation, and consisted of both theoretical and practical instruction on general principles and medical and psychological aspects of rehabilitation

and lectures on anatomy, physiology and pathology as applied to rehabilitation. Evaluations were made of that course, the United Nations International Training Centre for Technical Orthopaedics in Teheran and the WHO-sponsored projects on physical medicine and rehabilitation in Iran, Lebanon and the United Arab Republic.

National staff engaged in health education activities in the Region are mostly people trained under the auspices or on the initiative of WHO. The Organization assisted in Iran in the inclusion of health education in functional literacy projects within industrial and agricultural programmes for women. Advice was provided to the Government of the United Arab Republic on health education at the Lake Nasser Development Centre.

Assistance in the teaching of health education and advice on the health education content of the teaching programme were made available to the UNESCO-sponsored Arab States Functional Literacy Centre in Sirs-el-Layyan, United Arab Republic. Yemen was assisted in developing a health education programme and in incorporating health education in the curricula of agricultural schools and of teacher training institutions assisted by FAO and UNESCO.

Health education has been systematically introduced into family planning programmes in countries of the Region with the assistance of WHO.

The nursing manpower needs of the Region were discussed at a group meeting held in Nicosia in June (see page 252). In Iraq, orientation programmes were established for nursing staff, and in-service programmes were planned in connexion with the transfer of nursing services to a new city medical teaching hospital in Baghdad. All activities were carried out with the collaboration of international and national teaching staff and senior students at the College of Nursing, University of Baghdad. Advice on nursing was given to Cyprus, Israel and Syria.

A survey of medical X-ray facilities, carried out in 16 countries of the Region, revealed a striking insufficiency of both personnel and equipment for radiological services. Although most of the equipment was found to be relatively modern, 65 per cent. of the X-ray units surveyed in 15 countries lacked one or more essential radiological safety features. Very few X-ray operators were using any kind of radiation monitoring device—such as film badges or pocket dosimeters.

WHO has made assistance available to medical X-ray departments in evaluating and improving radiation safety precautions both for patients and for medical and auxiliary personnel exposed to ionizing radiation. During the year a technical check was made of a total of 282 installations at 98 institutions in six

countries. Advice was given on measures to improve radiological safety and a number of diagnostic X-ray units were repaired and put back into operation.

The WHO film badge service is providing film badges to institutions in Afghanistan, Ethiopia, Lebanon, Libya, Pakistan, the People's Democratic Republic of Yemen, Sudan, Tunisia and the United Arab Republic.

The Organization assisted in the assessment of sites and advised on installation of diagnostic X-ray units purchased for the Government of Lebanon. It also assisted with regard to the placement of general purpose diagnostic X-ray units for trial in Afghanistan, Pakistan, Sudan and Tunisia, as well as the exploration of two new sites in Yemen.

The fourth issue of a technical information bulletin giving the main facts about the safe use of X-ray equipment was widely distributed in English, French and Arabic versions.

Thirteen radiotherapy centres in Iran, Israel, Kuwait, Lebanon, Pakistan, Tunisia and the United Arab Republic have taken advantage of the service provided by WHO in collaboration with the International Atomic Energy Agency for improving the accuracy of radiation dosimetry by supplying thermoluminescent dosimeters to centres equipped with cobalt-60 teletherapy units.

A seminar on radiation protection was held in March at the Radiotherapy and Radioisotopes Centre, Al Sabah Hospital, Kuwait, to study the development of national programmes in radiation health, the establishment of radiation protection services and the planning and development of radiological facilities.

WHO has assisted Sudan in making a request for support from the Special Fund component of UNDP in developing national health laboratory services. A description of public health laboratory services in Somalia will be found on page 161.

Health Protection and Promotion

A regional food and nutrition seminar was held in Beirut in January. It was sponsored jointly by FAO, WHO and UNICEF, in association with the American University of Beirut. The nutritional problems of the Region were reviewed and stress was laid on the need to train high-level professional personnel from national administrations in the formulation of policies and execution of programmes on food and nutrition. As a consequence, a two-month training course was held in Beirut from July to August for participants from ministries of health, agriculture, education and planning of 14 countries of the Region.

Assistance in organizing or expanding applied nutrition activities was given to Ethiopia, Libya, Pakistan and Sudan. In Libya, in-service training of the Nutrition Division's laboratory technicians in parasitology, haematology and biochemistry was organized in the central laboratory in Tripoli, and guidelines for laboratory technicians in haematology were prepared in Arabic for the use of field personnel of the food and nutrition services project. A national food and nutrition council was established.

In Pakistan, the Planning Commission adopted the food policy and the nutrient targets proposed by the Inter-Departmental Committee on Nutrition as a basis for their agricultural planning in the fourth five-year plan. A provincial Nutrition Advisory Committee was set up for East Pakistan. In four pilot areas, where nutrition surveys had been carried out earlier, programmes to develop poultry-keeping, kitchen gardens, domestic fish ponds, etc., were initiated with assistance from UNICEF.

In Sudan the Nutrition Division drew up new plans, laying more emphasis on nutrition services and education through the Health Department. Four pilot areas were selected for the extension of nutrition services to certain provinces in the country.

Efforts to introduce protein-rich weaning foods were made in Ethiopia, Iran, Tunisia and the United Arab Republic with assistance from FAO, UNICEF and WHO. In Ethiopia, approximately 20 tons a month of a weaning food, Faffa, are being produced by the Ethiopian Nutrition Institute for sale through commercial channels and for distribution through selected health centres. In Tunisia, negotiations are under way between the Government, UNICEF and the Swedish International Development Authority to initiate steps for the production of the protein-rich mixture that was submitted earlier for field trials in that country. In Yemen, a school-feeding programme was started with assistance from the Organization.

In training programmes for workers in maternal and child health, special emphasis was laid on health education and child nutrition, especially the weaning problems of the young child and the use of weaning foods. The Organization gave assistance to a regional training programme in child health and midwifery at the American University of Beirut. Advice on the development of maternal and child health services and their integration into health services was given to Bahrain, the People's Democratic Republic of Yemen, Somalia and Yemen. Training curricula for maternal and child health workers in Libya were reviewed.

A symposium on the health aspects of human reproduction, family planning and population dynamics was held in Teheran, and a seminar on recent

advances in the physiological, clinical and public health aspects of human reproduction was organized in Baghdad. Assistance was given to the development of health aspects of family planning programmes in Iran, Iraq, Lebanon, Pakistan, Tunisia and the United Arab Republic.

Education and Training

There are now over 40 medical schools in the Region, and six new medical faculties are in different stages of planning in Iraq, Israel, Jordan, Kuwait, Libya and Saudi Arabia. WHO has assisted by providing teaching staff, fellowships, and teaching and scientific supplies and equipment and by arranging the exchange of professors. Medical libraries have been aided by contributions of specialized books and subscriptions to scientific periodicals.

During 1970, 12 professors provided by the Organization were teaching in medical institutions in Afghanistan, Ethiopia, Iran, Pakistan, Syria and Tunisia, and six medical officers were assisting in health training centres in Ethiopia, Libya, Qatar, Somalia and Yemen. Advice on the organization of departments or assistance in teaching and research programmes in medical schools was provided to Afghanistan, Iraq, Israel, Jordan, Pakistan, Syria and Tunisia. Assistance was given to Syria in formulating a request for support for the Medical School in Aleppo from the Special Fund component of UNDP.

Under the programme for the exchange of teaching staff, 20 professors from medical schools in Ethiopia, Iran, Iraq, Sudan and the United Arab Republic participated in the work of similar institutions in other countries in the Region.

Under the sponsorship of the Association of Medical Schools in the Middle East, which was established in 1968 at a WHO meeting on medical education in Khartoum, a workshop on teaching and evaluation methods in medical education was held in Alexandria, United Arab Republic, in March.

A seminar on the place of psychiatry in medical education was held in Alexandria in July with participants from 12 countries (see page 162), and a conference on medical education was held in Teheran in December.

Pharmacology and Toxicology

Governments of the Region have made considerable efforts to develop national pharmaceutical services, to apply good manufacturing practices and to establish quality control of pharmaceutical preparations. A number of countries have established divisions of pharmacy and medical supplies within their ministries

of health and WHO has assisted several in training the required personnel.

A travelling seminar on the quality control of pharmaceutical preparations—the first of its kind in the Region—was held in Pakistan, Iran and the United Arab Republic (see page 252).

A special group meeting on pharmacy education convened at the American University of Beirut in October provided an opportunity for deans and directors of faculties of pharmacy in the Region to discuss the standardization, improvement and modification of curricula and methodology of teaching pharmacy in the light of new concepts of pharmacy education, hospital pharmacy administration and the quality control of pharmaceutical preparations.

The Regional Committee

Sub-Committee A of the Regional Committee for the Eastern Mediterranean met at Brummana, Lebanon, from 21 to 24 September 1970. Sub-Committee B did not meet.

The meeting of Sub-Committee A was attended by representatives of Afghanistan, Cyprus, France, Iran, Iraq, Kuwait, Lebanon, Libya, Pakistan, the People's Democratic Republic of Yemen, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Republic, Yemen, and the two Associate Members, Bahrain and Qatar. The United Nations, UNICEF, UNDP, UNRWA and FAO were represented, as were the League of Arab States and 13 international non-governmental and other interested organizations.

In the discussion on the Regional Director's annual report for the period 1 July 1969 to 30 June 1970, stress was laid on the importance of integration of health planning into socio-economic plans, the need for evaluation of programmes and the continuing problem of shortage of technical manpower. Agricultural and irrigation developments had aggravated the situation with regard to the eradication of malaria, which remained a priority. Improvement of public health laboratories, pharmaceutical services and radiation protection measures and legislation were all considered important. Projects financed from the Special Fund component of the United Nations Development Programme and for which WHO is the executing agency included assistance to training programmes, health manpower institutes and environmental health programmes, notably community water supplies and sewerage schemes; they involved a total expenditure of over US \$2 million.

Other subjects discussed in detail included cholera, recent advances in tuberculosis control and medical education and the need for teacher training. The fifth general programme of work for a specific period and

the question of long-term financial indicators were also considered.

The proposed programme and budget estimates for the Region for 1972 were endorsed for transmission to the Director-General.

"The problems of main zoonotic diseases in the Eastern Mediterranean Region" was the subject of the technical discussions (see page 156). "The integration of maternal and child health and family

planning activities in the general health services" was selected as the subject for the technical discussions in 1971 and the discussions on "Occupational health services to meet the health needs of the people in developing countries" were postponed until 1972.

Sub-Committee A confirmed its previous decision to hold its 1971 and 1972 sessions in Tunisia and Jordan, respectively, and accepted the invitation of the Government of Syria to meet in that country in 1973.

Some Aspects of Work in the Region

A list of the projects current during the year will be found in Part III. The following have been selected for fuller description.

Local Health Services, Yemen

In 1965 it was decided to create a health centre in Taiz, Yemen, to provide integrated services for the community and train various categories of auxiliary personnel. The project was initiated in difficult circumstances, partly because of the internal unrest in Yemen at that time and of staffing difficulties. It was difficult to find young women of the requisite educational standard to train as auxiliary health personnel, and in the end semi-literate candidates had to be accepted. In spite of these initial obstacles, the WHO-assisted course for auxiliary nurses is now well established. There were six graduates in 1968 and eight in 1969; the general educational level of the candidates has risen, and 25 student nurses were enrolled by 1970. By giving Yemeni women an opportunity to contribute to their country's social progress, the course has undoubtedly helped to raise their status in the community.

Under a new plan of operations signed in September 1969, the WHO-assisted health services project in Taiz became independent of a similar project in Hodeida, with which it had previously been linked. With the support of the local authorities, the health centre was renovated and reorganized, and the outpatient clinic is now operating at full capacity.

Some 500 women are registered at the maternal and child health clinic attached to the centre, which is also responsible for the organization and technical supervision of maternity care at the Nasser Hospital. This hospital, which offers excellent training facilities, is used to give student nurses experience in maternity work. In its maternal and child health activities, the centre also maintains close working relations with the Swedish Save the Children Fund Hospital in Taiz, where student nurses receive practical training in the

wards and the outpatient, nutrition and tuberculosis clinics.

An 18-month course for sanitarians, in which 17 students are enrolled, was started early in 1970 under the direct responsibility of the project sanitarian. Following a survey of environmental conditions in Taiz, the centre has submitted recommendations on water supplies, refuse collection and disposal and food hygiene to the municipal authorities. A school health programme, which will eventually serve almost 8000 pupils, has also been started.

The work of the Taiz health centre is being extended to neighbouring areas. For this purpose, three sub-centres to serve 49 villages with a total population of about 100 000 are being set up; though these sub-centres are not yet fully operational, they were attended by some 4000 patients in the first half of 1970. Fifty-one other villages, with a total population of 47 000, are visited by mobile health units, which saw and treated about 2500 patients in the first half of the year. In Taiz itself, the project serves a population of some 15 000.

Public Health Laboratory Services, Somalia

In 1964, the Government of Somalia requested WHO assistance in establishing a central public health laboratory in Mogadishu. A plan of operations was drawn up in 1965 and signed the following year. The first stage of the project includes the organization of laboratory services, the training of laboratory personnel, the improvement of performance standards in clinical pathology tests, the introduction of microbiology and the extension of bacteriological work in tuberculosis.

In 1966, a WHO adviser visited Somalia to initiate work on the project. Suitable premises had to be found, staff recruited and equipment and supplies obtained.

The laboratory was officially inaugurated in February 1968 and has since been expanded. It now contains sections dealing with microbiology (including bacteriology and mycology units), biochemistry,

haematology, parasitology, serology and urinalysis. The staff includes a microbiologist and a laboratory technician recruited by WHO, and the Organization has awarded fellowships to two laboratory technicians for the study of mycology in Italy. The WHO-assisted health training institute in Somalia is collaborating in courses for laboratory assistants for the central laboratory and for the peripheral laboratories now being planned.

The work is developing both in quality and quantity, and three times as many tests were performed in 1969 as in 1968. Studies on the prevalence of helminthic, mycotic and bacterial infections in Somalia have already been successfully carried out, and the laboratory is expected to play an increasingly important part in epidemiological investigations of this kind.

Seminar on the Place of Psychiatry in Medical Education

Difficulties in adaptation to new conditions lead to internal stresses both in individuals and in communities. Thus socio-economic development, urbanization and industrialization inevitably raise mental health problems. The psychoneuroses, drug addiction and juvenile delinquency are now of major concern in the developed countries and this situation is likely to be repeated in the developing countries.

In the last 20 years, assistance in mental health work has been provided by WHO consultants to 10 countries in the Eastern Mediterranean Region, and in three others the Organization has assisted long-term projects in this field. So far, however, mental health services are poorly developed in most countries of the Region, largely because of a shortage of psychiatrists and psychiatric nurses. Old-fashioned methods are used for psychiatric care and there is a lack of interest in preventive measures.

Psychiatry, even more than most branches of clinical medicine, requires an intimate knowledge and understanding of local cultures and languages. Psychiatric care should therefore be entrusted, as far as possible, to physicians trained in the countries in which they practise. The teaching of psychiatry in the medical schools of the Region is, however, poorly developed in comparison with that of other major clinical disciplines.

Accordingly WHO convened a seminar in Alexandria, United Arab Republic, in July to review the place of psychiatry in medical education. Participants included psychiatrists and medical educators from 12 countries of the Region. It was generally agreed that psychiatry should no longer be considered an isolated clinical specialty but, rather, an essential

part of the medical curriculum. This would permit the future doctor not only to deal with cases of mental disorder but also to gain knowledge enabling him to establish a good relationship with his patients.

Specific objectives in the teaching of psychiatry were outlined. The participants considered that all medical students should become fully conversant with the psychiatric aspects of medical practice and learn to cope with psychiatric emergencies, to treat minor mental disorders and to refer more serious cases to the appropriate specialists.

In many medical schools in the Region there is as yet no provision for a chair of psychiatry and the subject itself is often optional. Even when the syllabus covers certain aspects of psychiatric medicine, it is usually more concerned with describing psychoses than with helping the student to understand the genesis, prevention and treatment of psychosomatic disorders and neuroses. It was generally felt by the participants in the seminar that the medical curriculum should place particular emphasis on the behavioural sciences (with special reference to psychology, sociology, cultural anthropology and human development) as well as on clinical psychiatry. Every medical school should have an independent, adequately staffed department of psychiatry, if possible within the university hospital, and the teaching methods employed should require the active participation of the student.

This change of emphasis in the medical curriculum should result in the training of general practitioners combining the compassion of the old-time family doctor with the therapeutic skills of the modern clinician.

Malaria Eradication, Tunisia

The preparatory phase of the WHO-assisted malaria eradication programme in Tunisia began in 1967, when house-spraying with DDT was started in a pilot zone in the northern governorates of Sousse and Kairouan. The number of cases of malaria recorded among the 600 000 inhabitants of the zone fell from 4790 in 1966 to 2360 in 1967, and spraying was extended to all 10 northern governorates in 1968.

It was originally thought that the three southern governorates—Gabès, Gafsa and Médénine—were free from malaria, but active and passive case detection operations revealed that they did in fact contain foci of the disease, and the programme was extended to them in 1969. In the same year, DDT spraying was discontinued in the northern governorate of Sfax, but not in any of the remaining 12 governorates.

As case detection and treatment were extended, a steady decline in the prevalence of the disease was recorded. In 1966, although only 93 000 blood slides

were examined, nearly 4800 cases of malaria were detected, whereas in 1969 some 540 000 slides were examined and only 457 cases detected.

In October 1969, the governorate of Gafsa suffered from severe floods, which left behind several large stretches of stagnant water. In February 1970, when the water began to dry up, the risk of new outbreaks of malaria in the area was thoroughly investigated. It was concluded that, as the zones affected were free from vegetation and far from human dwellings, the risk was small, and this has subsequently proved to be correct. They have, however, been re-examined from time to time to ensure that there is still no danger of renewed malaria transmission.

The programme has now reached the stage at which a number of areas are ready to enter the consolidation phase. Active case detection, covering the whole population, will continue in these areas, which were designated by an independent assessment team.

The programme has been planned and administered within the framework of the general health services. It

was hoped that malaria surveillance agents could act as multipurpose health workers and perform simple duties other than the collection of blood slides from fever cases. Initially, however, it was found necessary to recruit a number of workers specifically for such tasks as geographical reconnaissance, spraying and surveillance. The fact that the direction, execution and epidemiological evaluation of the programme have been in the hands of experienced public health administrators appears to have contributed to its success, notably by ensuring that it is given high priority at both the central and regional levels.

In 1970 WHO-assisted studies were carried out on the use of the fluorescent-antibody technique to determine immune responses to recent malaria infection.

The programme is co-ordinated with those of neighbouring countries by a malaria co-ordination committee which includes representatives of Algeria, Morocco and Tunisia. If the programme continues to progress at its present rate, the eradication of malaria from Tunisia should be achieved by 1974.

CHAPTER 19

WESTERN PACIFIC REGION

One of the principal aims of WHO assistance to developing countries in the Western Pacific Region is the establishment of national health plans as an essential step in planning for socio-economic development, together with the promotion of the necessary health manpower studies. The expansion of these activities in individual countries during the year was, however, restricted in some cases by national budgetary limitations and by the indifference of national planning agencies to health needs.

The continued high prevalence of communicable diseases and the recurrence of epidemics have focused attention on the need to develop epidemiological surveillance in countries of the Region. WHO assistance is therefore moving gradually from the control of specific diseases to the establishment or strengthening of national epidemiological and statistical services, the development of health laboratories and support for the training of the necessary health workers for these activities.

A new aspect of the regional programme was the increase in activities to improve teaching methods in medical schools. Plans were made to establish a regional teacher training centre for health sciences.

Communicable Diseases

The first regional course on epidemiological surveillance and international quarantine was held in the Republic of Korea and in Fiji in July (see page 265). Epidemiological and statistical advisory services were provided to Cambodia, the Republic of Korea and the Republic of Viet-Nam. The services of an inter-country communicable diseases advisory team were also available to countries requiring assistance in connexion with specific problems.

Cholera was reported from Brunei, Japan (imported cases), East and West Malaysia, and the Republic of Korea, as well as from the endemic areas of the Philippines and the Republic of Viet-Nam. There was a resurgence of the disease in the Republic of Korea despite a large-scale cholera vaccination campaign and a WHO-assisted programme of training in various aspects of cholera control. The Organization provided emergency supplies of cholera vaccine and calcium hypochlorite. It is clear that more effective

preventive measures are required, particularly for the improvement of environmental sanitation.

The fifth regional course on tuberculosis was sponsored by the Government of Japan and WHO in Tokyo from May to October (see page 263).

The tuberculosis control programmes in operation in Cambodia, Malaysia (see page 169), the Philippines, the Republic of Korea, the Republic of Viet-Nam and various countries and territories in the South Pacific were directed towards the complete coverage of susceptible populations by BCG vaccination, generally associated with the diagnosis of infectious cases through sputum examination and their domiciliary treatment. WHO assisted in organizing a study in China (Taiwan) on the degree of motivation affecting the regularity of attendance for ambulatory chemotherapy. In the Republic of Korea, a second national tuberculosis prevalence survey was started in March.

In Cambodia, practical training in BCG vaccination was given to rural midwives in two training areas set up in January. The target is to have more than 300 rural midwives taking part in the national BCG vaccination programme within three years. In Laos, WHO helped to assess tuberculosis activities in a demonstration health centre and advised on the training of workers and the reorganization of smallpox vaccination teams to include BCG vaccination activities.

Assistance in the control of venereal infections was provided to the Republic of Viet-Nam and Singapore.

No case of smallpox was reported in the Region. Support was given to various continuing vaccination and surveillance programmes but, as little information was available on the take rate in most countries, it was difficult to know whether the protection was evenly spread or to make any estimation of the risk of outbreaks.

In the Republic of Korea, a trial to assess the value of Japanese encephalitis vaccine was repeated in 1970 because very few cases occurred in 1969 when it was started. Vaccination was given to 100 000 school-children in an area where the disease is endemic, and to a further group of 40 000 children beginning school in 1970.

The trachoma control project in China (Taiwan), which has been in operation since 1960 with UNICEF

assistance, was completed during the year. An evaluation indicated that in 1970 the disease was no longer of great public health importance, except in a few areas where it had previously been highly endemic and where control operations should be continued (see page 255).

At a regional FAO/WHO seminar on veterinary public health, held in Manila in March, the nature and extent of the common zoonoses in the Region were studied and new developments reviewed in the diagnosis, epidemiology, prevention and control of parasitic zoonoses, toxoplasmosis, eosinophilic meningitis, leptospirosis, bovine tuberculosis, anthrax, rabies, Q-fever, bacterial infections and toxins and ichthyosarcotoxism. It was agreed that the extent of the problem should be determined in each country and that in developing national control programmes a cost analysis should be made in addition to an assessment of their possible epidemiological impact.

A review of the malaria eradication programme as recommended by the Twenty-second World Health Assembly was made in the Philippines, and a more realistic phasing of the programme was established. In West Malaysia, assistance was given in reviewing the long-term phasing of the malaria eradication programme and fitting it into that country's new five-year development plan. An economic and epidemiological evaluation of the implications of malaria control in the Territory of Papua and New Guinea commenced at the end of the year. In Brunei, the eradication campaign entered the maintenance phase in January but, on account of the continual influx of immigrant labourers, extreme vigilance is required to prevent the re-establishment of malaria transmission. Vigilance activities continued in China (Taiwan) and the Ryukyu Islands, where the malaria programmes were also in the maintenance phase.

The antimalaria programme in the British Solomon Islands Protectorate was converted to one of eradication, and a preliminary survey of the malaria situation was undertaken in the New Hebrides. In the Republic of Korea antimalaria work continued under the general health services.

The International Malaria Eradication Training Centre in Manila provided two courses on malariology and one on epidemiology for professional staff, and one for senior malaria technicians. In addition, courses on malaria were held at the WHO-assisted national training centres at Kuala Lumpur, Malaysia, and Tala, Philippines.

Environmental Health

The Organization is the executing agency for a water supply project in Kompong Som, Cambodia, supported by the Special Fund component of the

United Nations Development Programme (UNDP). In the initial stages of the project it is envisaged to meet most of the short-term water needs of the city. In West Malaysia, reviews were made of national water supply needs and water management practices, and lines of future development were recommended. In the Philippines, the water supply programme carried out with UNICEF assistance was assessed. In Western Samoa, the Organization provided advice on water treatment procedures. Assistance was given to East Malaysia in water supply and sewerage development in Sabah, and in hydrology in Sarawak.

In May, WHO completed the study of domestic and industrial water requirements in connexion with the Naktong river basin project, Republic of Korea, which is supported from the Special Fund component of UNDP with FAO as executing agency (see page 257).

Two long-term projects were started to assist Singapore in managing and operating sewage treatment works and in developing sewerage facilities. Assistance in sewerage development was provided to China (Taiwan) and Laos. A start was made with the second phase of the project for the development of a sewerage system for the Manila metropolitan area in the Philippines (see page 58), and a draft master plan for a sewerage system in greater Taipei was completed in a similar project in China (Taiwan) (see page 169). Both the last-named projects are financed from the Special Fund component of UNDP with WHO as executing agency.

The Organization assisted in studies on solid wastes disposal in China (Taiwan), the Republic of Viet-Nam and Singapore. Advisory services in general environmental health were provided for Cambodia, China (Taiwan), Laos, Malaysia, the Republic of Korea, the Republic of Viet-Nam and the Territory of Papua and New Guinea.

In China (Taiwan) advice was given on the control of water pollution and the treatment of industrial wastes, and in Singapore a preliminary assessment was made of the air pollution situation and the foreseeable problems. The Organization also advised on noise control in connexion with a project supported from the Special Fund component of UNDP for urban renewal and development in Singapore.

Organization of Health Services

The grouping of projects for the development of particular health services under one single plan of operations was completed in five countries and started in another. These overall projects aim to promote national health planning, to improve the co-ordination of national health programmes, to develop local health

organization, to make services more efficient and to encourage research in health practices.

In Laos, there was further development of health services in the demonstration area although the emergency situation prevented progress elsewhere. In Western Samoa, supervision and programme planning were strengthened at the central level. In the British Solomon Islands Protectorate, the organizational and management needs of the health services were assessed by the Organization and recommendations made for improvement. In the New Hebrides, WHO-assisted activities were started pending the development of a health services project.

In the Philippines, a beginning was made with community health surveys in two municipalities and with the training of field staff; field operational procedures were reviewed and improved. WHO advised Malaysia on the regionalization of medical care and recommended the further integration of curative and preventive activities in the general health services. Additional assistance was provided for operational research in connexion with the development of rural health services.

WHO assistance to countries and territories in the South Pacific where there are no long-term WHO projects was broadened to include general public health advisory services in addition to maternal and child health and family planning activities.

A three-month course in national health planning was sponsored by WHO in Manila, beginning in June (see page 170). Consultant services in health planning, including health education, were provided early in the year to Malaysia in connexion with the preparation for the second Malaysia plan.

Health planning units have been established or re-established in Malaysia, the Philippines, the Republic of Korea and the Republic of Viet-Nam. Advisory services in national health planning were provided to the Republic of Korea in connexion with the preparations of the health component of the country's third five-year plan. Assistance was provided in reviewing immediate and future planning in Laos.

In the field of nursing studies, senior nurses in Australia, China (Taiwan), Japan, Malaysia, the Republic of Korea, the Republic of Viet-Nam, the Ryukyu Islands and the Territory of Papua and New Guinea were assisted in initiating nursing manpower surveys and nursing activity studies or in participating in those already started.

Nursing education programmes consistent with the pattern of general education and the needs and resources of the country were supported at appropriate levels—university, intermediate and auxiliary—in Cambodia, the Gilbert and Ellice Islands, Laos, the

New Hebrides, the Philippines, the Republic of Korea and Tonga. Assistance was given to basic nursing education programmes in Malaysia and to the University of Malaya for the preparation of nursing personnel for administrative and teaching positions.

Through the nursing component of basic health services projects in the British Solomon Islands Protectorate, Laos, Malaysia, the New Hebrides, the Philippines, the Republic of Korea and Western Samoa, assistance was given in planning, organizing, implementing and evaluating public health nursing activities and preparing nurses and midwives to function effectively in comprehensive community health services.

Advisory services were provided to assist in upgrading nursing and midwifery education and services in the scattered island territories of the South Pacific area.

The project to strengthen nursing administration and practice in Singapore, which had been in operation with assistance from WHO and UNICEF since 1956, was completed in 1970 (see page 260).

Postgraduate courses in health education leading to a master's degree were established in China (Taiwan) at the Taiwan Normal University and at the Institute of Public Health of the National Taiwan University. With the inauguration of these programmes, professional training centres for health education specialists are now operating in the Region in three languages—Chinese, English and Japanese.

Assistance was given to the British Solomon Islands Protectorate in initiating a health education advisory services project. Health education developments in Cambodia were reviewed, including UNICEF-assisted activities to train Buddhist priests and enable them to bring knowledge of healthful living practices to remote rural areas. A series of health education lectures was given to medical and health personnel in the Ryukyu Islands, where a health education section has been established in the Public Health Division of the Government's Welfare Department.

As a result of WHO's support to school health education, increased attention was given to the health aspects of curricula in primary and secondary schools and teacher training institutions in Singapore and Malaysia.

In the WHO-assisted rehabilitation project in Laos, special attention was given to amputees and handicapped children who have had poliomyelitis. A new class was enrolled in the three-year physiotherapy course for local personnel which began in 1968.

In China (Taiwan) the Organization helped to establish a four-year degree course in occupational therapy at the National Taiwan University, provided

advisory services to two hospitals and assisted in assessing rehabilitation needs. Studies were initiated with a view to developing national standards of education and practice in the field of rehabilitation.

Technical assistance to laboratory services covered diagnostic methods, production of biological substances, training of personnel and research, as well as the organization of health laboratory services as an integral part of national health services.

In Singapore, the Organization provided advisory services on the organization and administration of the central blood bank and on the introduction of advanced techniques for work on blood diseases.

WHO has worked with the International Atomic Energy Agency in a project to improve radiation dosage in cobalt-60 therapy through a mailing service using thermoluminescent dosimeters for the comparison of prescribed doses with those actually delivered. A first shipment of dosimeters has been made to institutions in several countries that expressed interest in this service.

The Organization gave advice to China (Taiwan), Malaysia and Singapore concerning the maintenance of X-ray equipment and assisted in training groups of X-ray technicians.

An inter-regional seminar on the use of medical radiological apparatus and facilities was held in Singapore in November (see page 271).

WHO assisted in developing a central health statistical service in Laos, improving medical record-keeping in hospitals and health centres and training the staff required. Assistance was provided to Tonga for a review of the health and medical records systems in hospitals and public health services. Three two-month courses for statistical and medical records officers were conducted at a pilot centre with a model hospital medical records and statistics system that has been established in the Republic of Viet-Nam. A total of fifty-one persons have been trained at the centre. The Organization provided statistical support for epidemiological activities in Cambodia and the Republic of Korea. In the latter country, technical advice was also given regarding the statistical aspects of the field trial of Japanese encephalitis vaccine mentioned earlier in this chapter.

Family Health

Assistance was provided to the Republic of Viet-Nam in reviewing school health services and training programmes for school health personnel. In the Republic of Korea, WHO and UNICEF collaborated in a survey of the health needs of mothers and children and the care provided. In Laos and in various countries and territories of the South Pacific, assistance to

maternal and child health activities was given as an integral part of projects for the development of health services.

Activities in family planning were centred on the strengthening of the regional structure for the provision of assistance and on preparatory work for the country and inter-country activities to be undertaken with the help of the United Nations Fund for Population Activities. Particular attention was given to the integration of family planning activities within the general health services.

An orientation course and an inter-country course on the health aspects of family planning were held in Manila, and advice on the integration of family planning in the maternal and child health programme was provided for China (Taiwan).

Health Protection and Promotion

A meeting of investigators on the epidemiology of cardiovascular diseases in the Pacific took place in Wellington, New Zealand, in February under the joint sponsorship of the clinical epidemiology unit of the Wellington Hospital and WHO. The meeting discussed findings in different ethnic groups, the effects of migration on cardiovascular diseases and several aspects of research methodology (see page 49).

The nutrition element was strengthened in the series of courses given for doctors, nurses and other personnel in Western Samoa. FAO collaborated with WHO in nutrition teaching activities in Fiji, Papua and other South Pacific territories. In the British Solomon Islands Protectorate, comprehensive surveys were carried out on health, nutritional status, family size and socio-economic and agricultural conditions in Honiara and the rural areas.

Assistance was provided to the Philippines in strengthening nutrition teaching activities in schools of medicine and nursing, in developing the nutrition activities of the National Children's Hospital, in establishing units for the treatment of malnutrition in selected hospitals and in promoting a national training programme in paediatric nutrition. Support was also given to the Institute of Hygiene. Applied nutrition activities continued in Cambodia (see page 170) and in Malaysia.

WHO collaborated with FAO in a project in Singapore to assist in studying nutritional disorders and the nutritional status of vulnerable groups, and to help to develop nutritional training programmes.

A manual on the health aspects of food and nutrition in the Western Pacific Region was prepared; 5500 copies were distributed and requests were received for about 3000 more. A second edition is in preparation.

Advice with regard to goitre control was provided to Malaysia and the Philippines.

A national dental survey was begun in China (Taiwan) with WHO assistance. In Malaysia and Singapore similar surveys were conducted on the basis of WHO recommendations.

WHO assisted Malaysia in making a basic study of the occupational health department, and helped China (Taiwan) in reviewing the activities of the industrial health centres and the occupational health administration system and in training personnel in industrial hygiene practices and methodology. In the Philippines, WHO collaborated with ILO in assisting the Government to establish the legal, administrative and operational framework for a co-ordinated national programme of occupational health and safety.

In May, the first regional seminar on the quality control of pharmaceutical substances was held in Manila. It reviewed the legislative, administrative and technical aspects of the subject as well as manpower and training requirements, and recognized that the first priority was the improvement of inspection. Malaysia was assisted in preparing for the establishment of a regional centre for training drug inspectors.

Education and Training

Apart from the fellowships programme, assistance to education and training in the Region has been directed principally to strengthening medical schools and institutes of public health.

Advisory services on the teaching of social and preventive medicine, curriculum formulation and other aspects were provided to medical schools in Malaysia, the Republic of Korea and Singapore.

Assistance in the form of both long-term and short-term teaching staff as well as supplies and equipment was given to the Royal School of Medicine in Laos. WHO provided a teacher of social and preventive medicine for the medical school of the Territory of Papua and New Guinea.

With the assistance of WHO and the participation of the Association of Philippine Medical Colleges, two workshops on teaching methods in medical education were held in Manila and one in Cebu city. The participants, from seven Philippine medical schools, discussed the objectives of medical education and their influence on teaching methods and evaluation techniques, ways of improving current teaching methods, problems of student performance and systems of assessment of the work of both student and teacher. Similar workshops were organized in other countries.

A regional seminar on the teaching of preventive

medicine in medical schools was held in Manila in October. Its main objectives were to review the present position of preventive medicine in the medical school curriculum, to examine ways of improving teaching methods and to consider the means of integrating the teaching of preventive medicine into that of other disciplines in medical schools. In its report, the seminar laid down a set of guidelines for national workshops on medical education.

A regional centre for the training of anaesthetists was set up in Manila, and the first course was started late in 1970.

The Organization advised on the establishment of training programmes in public health administration in the Territory of Papua and New Guinea.

Pending the construction of the new building of the National Institute of Public Health in the Republic of Viet-Nam, a number of courses for middle and lower-level personnel were in progress in temporary premises, and field training facilities were developed. UNICEF has agreed to provide support to the training programme.

The Regional Committee

The twenty-first session of the Regional Committee for the Western Pacific was held in Manila from 1 to 8 September 1970. The session was attended by representatives of all the Member States in the Region, and of the Member States responsible for territories in the Region. The United Nations, UNDP, the South Pacific Commission and the International Committee of Military Medicine and Pharmacy were represented, as well as nine non-governmental organizations. The Director-General attended the session.

The Committee nominated Dr Francisco J. Dy for reappointment to the post of Regional Director which becomes vacant on 30 June 1971, decided that no other names be sent forward, and requested the Director-General to propose to the Executive Board Dr Dy's appointment for a further period of five years from 1 July 1971.

The proposed programme and budget estimates for 1972 were reviewed by the Committee and approved for transmission to the Director-General.

The Committee examined the annual report of the Regional Director for the period 1 July 1969 to 30 June 1970. The concept of global surveillance of communicable diseases of international importance and national surveillance for those of local importance was endorsed. The problems faced by governments in connexion with WHO fellowships were considered and it was agreed that the WHO fellowships pro-

gramme should be discussed at the Committee's twenty-second session.

During its consideration of resolution WHA23.35 of the Twenty-third World Health Assembly on the training of national health personnel, the Committee noted that some countries had had difficulty in providing data on their health manpower resources and education and training programmes. It requested the Regional Director to assist such countries by providing advisory or consultant services if requested.

The Committee decided to extend its third general programme of work up to the end of 1972. It considered a fourth general programme of work for the Region and requested the Regional Director to submit the proposed programme to the Director-General for incorporation in the Organization's global general programme of work for the period 1973-1977.

With regard to family planning, the Committee noted that the contribution of the United Nations Fund for Population Activities had made it possible to plan a considerable expansion of WHO's work in that field.

The Committee endorsed two proposals of the Regional Director, one for the establishment of a regional programme on the prevention and control of environmental pollution and the other for a comprehensive and co-ordinated teacher training programme for health personnel.

After discussion of a report on long-term financial indicators the Committee agreed that such a complex subject required more detailed study and decided to postpone further consideration of the matter.

The Committee decided to hold its twenty-second session at the regional headquarters in Manila unless an invitation was received for it to be held elsewhere. The Committee noted that it was only in the Western Pacific Region that it was customary for the host government to meet the total additional costs of holding a meeting of the Committee in its country, and decided that this question should be placed on the agenda of its twenty-second session.

A typhoon prevented the holding of meetings on 2 and 3 September, and the Committee therefore decided to postpone the technical discussions until 1971.

Some Aspects of Work in the Region

A list of the projects current during the year will be found in Part III. The following have been selected for fuller description.

Tuberculosis Control, Sarawak

A WHO-assisted project in Sarawak, East Malaysia, aims at developing a practical, comprehensive and integrated tuberculosis programme within the general public health services, training various categories of personnel, studying the epidemiology of the disease, and conducting field trials to find more effective procedures, applicable under local conditions, for its control.

Before WHO assistance started, BCG vaccination preceded by tuberculin testing had been carried out for several years under a bilateral aid programme. Chest clinics had been set up in the divisional health centres, and both hospital and ambulatory treatment were provided.

WHO participation began in 1967, with the assignment of members of the WHO regional tuberculosis advisory team. The Organization granted a fellowship to a medical officer, who was later appointed State Tuberculosis Officer with the task of co-ordinating

and supervising the project. Assistant health visitors, who had been trained by the advisory team, carried out sputum-testing of persons with respiratory symptoms, supervised ambulatory treatment and undertook direct BCG vaccination of persons under 19 years of age. A senior WHO adviser was assigned to the project in 1968 for a period of three years.

Achievements to date include the BCG vaccination of approximately 300 000 persons and the establishment of standardized records and a state tuberculosis register. By the end of June 1970, some 2600 patients were registered for ambulatory treatment and about 1800 of them were known to be collecting their drugs regularly. Since 1969, the auxiliary workers originally trained only in tuberculosis work have been assigned to general outpatient dispensaries as a first step towards the integration of the project in the general public health services.

Planning of Sewerage System, Taipei

WHO is executing agency for a project, financed from the Special Fund component of the United Nations Development Programme, to assist the Government of China (Taiwan) in preparing a master

plan for a sewerage system to serve the Greater Taipei area, in training the local personnel who will work on the design, construction, supervision, management, operation and maintenance of the system, and in arranging for the necessary legal, organizational, managerial and financial studies. The total cost of the project is US \$1 034 000, to be covered by roughly equal contributions from the Government and from the Special Fund.

The plan of operation was signed in January 1969 and the WHO project manager was assigned to Taipei in the same month. A firm of engineering consultants completed preliminary field studies in July 1970 and recommended a first construction programme to be carried out in two stages, over a period of 16 years, at an estimated cost of \$151 million. This would provide a system capable of serving a population of 1 600 000 and of dealing with the industrial wastes that amount to about 35 per cent. of the total volume of wastes in the area.

The draft master plan, covering the period 1970-2020, was completed in December 1970. The part of the study area ultimately to be served with sewers is about 25 000 hectares and the three million population at present covered is expected to double by the year 2020. The plan was drawn up after a comprehensive study of the river system in the Taipei region and its capacity for assimilating the wastes from the area. It was noted that much of this system is heavily polluted in dry periods of the year. The proposed sewerage system would transport all liquid wastes out of the Taipei drainage basin and dispose of them in the Straits of Taiwan by means of a marine outfall sewer. Other studies carried out in connexion with the plan dealt with present and future industrial waste problems, the disposal of nightsoil and methods of financing the first construction phase. Legislative and managerial studies have also been undertaken with a view to creating an agency to administer the design, construction and operation of the sewerage system.

Applied Nutrition, Cambodia

Since 1967, WHO has been co-operating with the Government of Cambodia and UNICEF in a programme to raise nutritional standards in Cambodia. Food and nutrition surveys are being carried out in readily accessible pilot areas, and work in nutrition education, food production and supplementary feeding is being developed. Local staff for the programme are being trained as needed.

Tuk Thla, in Kandal Province, and Oudong District, Kompong Province, were selected as pilot areas. Owing to a shortage of staff, the initial training, field

work and data processing took longer than anticipated; in addition, field work in the second pilot area was interrupted by military operations in 1970. Surveys carried out in 1967-1968 showed that growth retardation—attributable mainly to undernutrition and associated protein deficiency—was frequent among infants and toddlers. Intakes of vitamin A, the vitamin B complex and iron were estimated to be very low.

A nutrition laboratory has been set up with the aid of a WHO biochemist, who also advised on various aspects of health laboratory work in Cambodia. The laboratory, which is attached to the paediatric centre in Kantha Bopha, Phnom-Penh, has been equipped with UNICEF assistance and is now ready to collaborate in survey work.

While the Ministry of Public Health is participating actively in the programme, it has not yet been possible to secure the full co-operation of the Ministries of Education and Agriculture. As a result, progress has not been as rapid as expected. However, teams have been trained to carry out surveys of nutritional problems and needs in different parts of the country as soon as sufficient government support can be obtained. It was decided in 1970 that, in the next phase of the project, special stress would be laid on providing general nutrition courses for doctors, nurses, midwives, teachers, monks and other community leaders.

Regional Course on National Health Planning

For the past three years, an annual course on health planning has been organized in Manila by WHO in collaboration with the Institute of Hygiene, University of the Philippines. Its purpose is to acquaint national health administrators from countries of the Western Pacific Region with the general principles of national planning for socio-economic development and with the principles and methods of national health planning.

So far WHO has had administrative responsibility for the course, but this will be taken over by the University of the Philippines from 1973 onwards. Under the present plan of operations, WHO provides consultants, honoraria for lectures and supplies and equipment. Arrangements are also made for the secondment of international staff from such institutes as the Asian Institute for Economic Development and Planning. The Organization also covers the cost of attendance of national health workers participating in the course. Offices and classrooms are made available by the University. A demonstration area set up in Rizal Province in connexion with a WHO-assisted project for the general development of health services in the Philippines is used by the participants for field practice.

The three-month annual course comprises a review of the main subjects with a bearing on planning (economics, sociology, demography, operational research, public administration); an introduction to overall planning for socio-economic development; and instruction in the methodology of health planning.

Of the 33 participants in the three courses held to date, 22 were health workers from various countries

of the Region, one was from the United States Agency for International Development, and 10 were WHO staff members.

The project is being extended to include assistance to national training programmes in health planning, the preparation and testing of a teaching manual on the subject and the preparation of a practical health planning manual adapted to the needs of developing countries.

PART III

PROJECT LIST

PROJECTS IN OPERATION IN 1970

This part of the report contains a list of the projects—country, inter-country and inter-regional—that were in operation during the whole or part of the period from 1 December 1969 to 30 November 1970. Continuing projects for which the only assistance given during the period was technical advice from headquarters or regional offices are not normally shown.

In country projects, the purpose for which the government or governments undertook the project is stated. Details of the assistance provided by the Organization and of the work done are given for completed projects and refer to the whole period over which the project was assisted by the Organization. Such details are not given for continuing projects.

As in former Annual Reports, an attempt has been made to summarize the immediate results of projects for which the Organization's assistance terminated in the period under review and, where the nature of the work has permitted, to assess or evaluate how far the project has succeeded in the purposes for which it was undertaken. It has not been possible to do this for all completed projects; there has not been time, for example, to assess those that ended late in the period covered.

The projects are grouped by region in the following order: Africa, the Americas, South-East Asia, Europe, Eastern Mediterranean and Western Pacific. In order to give a balanced account of the health programme in the Americas, the list for that region includes the projects assisted by PAHO in addition to those assisted by WHO. For each region, projects in individual countries are given in the alphabetical order of countries; the projects that concern more than one country follow, and are lettered AFRO, AMRO, SEARO, EURO, EMRO or WPRO. Inter-regional projects are given at the end of the list.

Under the heading "Fellowships" are shown those fellowships awarded during the period 1 December 1969 to 30 November 1970 that do not form part of assistance to a larger project. A table showing all the fellowships awarded during the same period, by subject of study, is given in Annex 9.

The dates given, between brackets, after the project title indicate the duration of assistance to the project, whether such assistance is continuous or intermittent. For projects not completed during the period under review, the date of estimated termination of assistance is given, where possible, in italics. Names of co-operating agencies, whether or not they have contributed funds, are given, between brackets, after the source of funds.

The abbreviations used include the following: R—regular budget; MESA—Malaria Eradication Special Account; UNDP/TA—Technical Assistance component of the United Nations Development Programme; UNDP/SF—Special Fund component of the United Nations Development Programme; UNFPA—United Nations Fund for Population Activities; AID—United States Agency for International Development. Other abbreviations are explained in the list on page II.

AFRICAN REGION

Botswana 0017 Development of Basic Health Services (1969 -) R UNDP/TA

To develop basic health services, with emphasis in the first instance on epidemiological surveillance and control of communicable diseases and on integration of public health in training programmes for health personnel.

Botswana 0200 Fellowships R: Nursing education (nine months), psychiatric nursing (12 months), tropical public health (nine months), trypanosomiasis (20 days).

Burundi 0010 Community Water Supply (1968 -) UNDP/TA

To plan and construct water supply systems for Bujumbura, Kitega and other towns.

Burundi 0013 Smallpox Eradication (1967 -) R Special Account for Smallpox Eradication

To plan and implement a programme of smallpox eradication in the country.

Burundi 0014 Development of Basic Health Services (1969 - 1973) R UNDP/TA UNICEF

To plan the health service and extend and improve the basic health services, with emphasis on improvement of family health and the nutrition of mothers and children; also to train sanitation staff and auxiliary and state-diploma nurses, and instruct all categories of health staff in health education techniques.

This project incorporates the projects for maternal and child health services (Burundi 0003) and environmental health (Burundi 0005) assisted by WHO between 1962 and 1969.

Burundi 0015 Integrated Rural Development Project (Health Aspects) (Feb. - April 1970) UNDP/SF (FAO)

In connexion with the integrated rural development project being undertaken with assistance from the United Nations Development Programme (Special Fund component) and for which FAO is the executing agency, a WHO consultant was provided to carry out a study of the general public health situation in the Mosso-Cankunza region and to make recommendations for improving the health and environmental sanitation conditions so as to facilitate the settlement of new immigrants. He investigated particularly the incidence of communicable diseases in the region, especially malaria, trypanosomiasis, smallpox and louse-borne typhus, and made a study of schistosomiasis in the Ruzizi valley, as well as of deficiency diseases (avitaminoses, kwashiorkor, etc.).

Burundi 0200 Fellowships R: Pharmacy (12 months), public health (12 months), undergraduate medical studies (11 for 12 months).

Cameroon 0010 Health Services (1961 - 1973) UNDP/TA

To reorganize and strengthen the health services in West Cameroon.

Cameroon 0016 Development of Nursing Services (1962 - 1974) UNDP/TA

To develop programmes for the education of midwifery and nursing personnel and to strengthen nursing services.

Cameroon 0019 University Centre for Health Sciences, Yaoundé (1966 -) UNDP/SF

To develop a university centre for health sciences in Yaoundé, and to train professional and auxiliary personnel.

Cameroon 0028 Development of Basic Health Services (1968 -) R UNDP/TA UNICEF

To develop basic health services and train the necessary personnel; to evaluate the progress made in the mass malaria chemotherapy campaign in schoolchildren, to carry out epidemiological investigations and continue geographical reconnaissance in the areas in which basic health services are to be further developed; and to improve environmental health.

This project incorporates the environmental sanitation project (Cameroon 0023), assisted by WHO since 1968, as well as the former malaria pre-eradication programme (Cameroon 0002).

Cameroon 0029 Nursing Schools, Ayos, Bamenda and Garoua (1969 - 1974) R

To further the training of student nurses in public health through financial support of the three nursing schools at Ayos, Bamenda and Garoua.

Cameroon 0200 Fellowships R: Anaesthesiology and resuscitation (12 months), histology and embryology (12 months), nursing (12 months), nutrition (12 months), otorhinolaryngology (six months), paediatrics (12 months), parasitology and tropical pathology (12 months), undergraduate medical studies (12 months).

Cameroon 0201 Fellowships UNDP/TA: Undergraduate medical studies (12 months).

Central African Republic 0010 Nursing Education (1966 - 1974) UNDP/TA

To upgrade and develop the programme for basic nursing education at the school of nursing in Bangui.

Central African Republic 0015 Development of Basic Health Services (1969 - 1973) UNDP/TA UNICEF

To develop the basic health services, train health staff of all categories, and plan and implement a long-term sanitation programme.

This project incorporates the environmental sanitation project (Central African Republic 0007), assisted by WHO since 1964.

Central African Republic 0017 Sanitation and Drainage, Bangui (1969 -) R UNDP/SF (ILO)

To plan and implement a sanitation and drainage programme for the residential districts of Bangui and to train municipal sanitation workers.

Central African Republic 0018 Smallpox Eradication (1969 -) R

To carry out a smallpox eradication programme.

Central African Republic 0200 Fellowships R: Microscope maintenance (six weeks), paediatrics (12 months), undergraduate medical studies (12 months).

Chad 0010 Development of Basic Health Services
(1964 - 1973) R UNDP/TA UNICEF

To develop and strengthen the basic health services in rural and urban areas, with emphasis on maternal and child health; to plan and carry out a long-term sanitation programme, and to train personnel of all categories.

This project incorporates the project for maternal and child health services (Chad 0003), assisted by WHO between 1965 and 1969.

Chad 0014 Nursing Education (1962 - 1974) R UNICEF

To raise the standard of nursing education to state-diploma level and to train midwives.

Chad 0025 Smallpox Eradication (1968 -) R

To carry out a smallpox eradication programme.

Chad 0200 Fellowships R: Administration of health and welfare institutions (five for 12 months), undergraduate medical studies (12 months).

Comoro Archipelago 0007 Development of Basic Health Services
(1970 -) R

To develop basic health services and implement mass campaigns against yaws and smallpox; also to complete the study of malaria epidemiology and prevalence and plan antimalaria measures suited to existing conditions.

Congo (Democratic Republic of) 0008 Smallpox Eradication
(1967 -) R Special Account for Smallpox Eradication

To carry out a smallpox eradication programme combined with BCG immunization, develop epidemiological surveillance, and evaluate the programme.

Congo (Democratic Republic of) 0009 Medical Schools, Kinshasa and Lubumbashi (1960 -) R

To develop the medical schools in the universities of Kinshasa and Lubumbashi.

Congo (Democratic Republic of) 0010 Nutrition Programme
(1968 -) R

To develop nutrition work within the health services, with emphasis on training in nutrition at all levels.

Congo (Democratic Republic of) 0011 Development of Nursing Services (1968 - 1976) R

To train nurses and midwives at state-diploma and auxiliary levels and to set up a nursing unit at the Ministry of Public Health; to develop the nursing components of the basic health and maternal and child health services.

Congo (Democratic Republic of) 0012 Organization and Development of Environmental Health Services
(1968 -) R UNICEF

To plan and develop environmental health services, train personnel and organize a sanitation programme in which special attention will be given to water supplies and waste disposal.

Congo (Democratic Republic of) 0014 Development of Basic Health Services (1968 -) R UNDP/TA

To develop the basic health services, including maternal and child health services; to assess the epidemiology of malaria and organize malaria control measures as required; and to train all categories of personnel in centres and demonstration areas.

Congo (Democratic Republic of) 0015 Medical Care Services (1968 - 1972) R

To train hospital personnel, including hospital administrators and radiological assistants, and provide refresher courses.

Congo (Democratic Republic of) 0016 Epidemiological Services (1968 -) R

To develop central epidemiological services, including services for the control of tuberculosis, leprosy and trypanosomiasis, and to strengthen health laboratories.

Congo (Democratic Republic of) 0018 Medical Training Institute, Kinshasa (1968 -) R UNDP/SF

To train various categories of health personnel.

Congo (Democratic Republic of) 0022 Health Component in Yangambi Agronomic Centre Project
(1969 - 1972) Funds-in-trust

To plan and provide a health service for the staff of the National Institute for Agronomic Studies and the population of the surrounding area, and to train health personnel in preventive and curative medicine.

Congo (Democratic Republic of) 0200 Fellowships R: Hospital and medical care administration (12 months), kinesotherapy (20 months), microbiology (two for one month), microbiology, immunology and serology (12 months), orthopaedic appliances manufacture (five months), plague control (two months), public health (two for 12 months), sanitary engineering (three for 12 months).

Dahomey 0018 Smallpox Eradication (1967 -) R

To carry out a smallpox eradication programme.

Dahomey 0022 Development of Basic Health Services (1968 - 1973) R UNICEF

To develop the basic health services, including the maternal and child health services; to develop an environmental sanitation programme in urban and rural areas; to train health personnel of all categories; and to improve methods and facilities for the diagnosis and treatment of malaria.

Dahomey 0023 Health Laboratory Services (1970 -) R

To develop national health laboratory services.

Dahomey 0024 Nursing Education (1969 - 1974) R

To revise and develop basic education programmes for nurses and midwives at state-diploma level, and for auxiliaries.

Dahomey 0025 University Centre for Health Sciences, Cotonou (Oct. 1970) R

A mission composed of a medical teacher, an architect and two officials from the Ministry of Health and the Ministry of Education visited Brasilia and Ankara to observe the practical application of modern medical teaching methods, and particularly techniques of integrated teaching.

Dahomey 0200 Fellowships R: Anaesthesiology and resuscitation (three for 12 months), dental and facial orthopaedics (14 months), dental surgery (12 months), endemic disease control (two for 10 months), leprosy control (four for three months), obstetrics and gynaecology (12 months), pharmacy (six months), sanitation (12 months), school health (12 months), social sciences (12 months), social welfare (12 months), undergraduate medical studies (14 for 12 months).

Equatorial Guinea 0001 Consultative Services (1969 -) R

To plan and develop health services, giving particular attention to general administration, medical care, environmental health, the training of health personnel of various categories and the improvement of basic health services.

Equatorial Guinea 0002 Operational Services (1969 -) R

To operate preventive and curative health services and train health personnel of various categories.

Equatorial Guinea 0200 Fellowships R: Laboratory techniques (six months), nursing (six for 12 months), undergraduate medical studies (12 months).

Gabon 0016 Nursing Education (1961 - 1973) R

To develop basic programmes for the training of professional and auxiliary nurses.

Gabon 0018 National Health Planning (Sept. - Dec. 1970) Funds-in-trust

WHO provided two consultants—a medical officer and an economist—to evaluate the implementation of the planning process and to make recommendations for the further development of the health services, including the training of personnel for implementing the plan.

Assistance in formulating the national health plan was provided in 1963.

Gabon 0020 Development of Basic Health Services (1969 - 1972) R

To develop the basic health services, with emphasis on maternal and child health, plan and implement a long-term sanitation programme, and train health personnel of all categories.

This project incorporates the projects for maternal and child health services (Gabon 0003) and environmental sanitation (Gabon 0006), assisted by WHO between 1961 and 1969.

Gabon 0021 University Centre for Health Sciences (March - April 1970) R

A consultant assisted the Government in studying the possibility of establishing a university centre for health sciences.

Gabon 0200 Fellowships R: Anaesthesiology and resuscitation (12 months), microbiology (12 months) pharmacy (18 months), undergraduate medical studies (two for 12 months).

Gambia 0014 Medical Entomology (Sept. - Oct. 1970) UNDP/TA

A consultant assisted in studying the problem of mosquito control in Bathurst and its suburban areas and made recommendations on the improvement of control measures.

Ghana 0005 Schistosomiasis Control (1959 - 1974) UNDP/TA

To carry out a schistosomiasis control programme, based on the results of previous studies on intermediate snail hosts and local epidemiology of the disease.

Ghana 0011 Tuberculosis Control (1962 -) UNDP/TA UNICEF

To organize a tuberculosis control programme, integrated into the general health services.

Ghana 0027 Post-basic Nursing Education (1963 - 1972) R

To develop post-basic nursing education in the University of Ghana.

Ghana 0031 Master Plan for Water Supply and Sewerage for the Accra-Tema Metropolitan Area (1963 - 1971) UNDP/SF

To provide technical assistance to the Ghana Water and Sewerage Corporation for the Accra-Tema water supply and sewerage scheme, and to train personnel for responsible positions in the Corporation.

Ghana 0033 Medical School, Accra (1968 -) R

To strengthen the faculty and improve the teaching facilities at the medical school.

Ghana 0034 Health Legislation (Nov.-Dec. 1969; July-Aug. 1970) R

A consultant was provided to study the situation regarding health legislation in Ghana and to assist the Ministry of Health in the preparation of draft legislation on public health and health services.

Ghana 0036 Public Health Consultant Services: Administrative Management (July - Oct. 1970) R

Two consultants were provided by WHO to investigate and make recommendations on the administrative structure of the Ministry of Health and the medical supply stores.

Ghana 0037 Health Component in Pilot Irrigation Development Scheme, Asutsuare (Nov. 1969 - Aug. 1970) UNDP/SF (FAO)

In connexion with the Asutsuare pilot irrigation development scheme, which is assisted by the United Nations Development Programme (Special Fund component) and for which FAO is the executing agency, a consultant was provided to assist the Government in surveying the biological, malacological and ecological situation in the project area and to determine the impact which the project activities may have on the prevalence of water-borne parasitic diseases and other communicable diseases.

Ghana 0039 Health Education (1967 -) R UNDP/TA

To reorganize the health education service; to intensify the training of medical and paramedical staff for the health educational aspects of their work; and to improve the training in health education given to undergraduate medical students.

Ghana 0041 Health Component in Volta Lake Research Project (1969 -) UNDP/SF (FAO)

To conduct research as a basis for planning and co-ordinating control measures against water-borne parasitic diseases and to develop a general public health programme for the project area.

Ghana 0045 Nursing Education (1968 - 1971) R

To review and strengthen basic nursing education in the country.

Ghana 0200 Fellowships R: Audiology (12 months), food science and applied nutrition (two for six months, three for eight months), leprosy (six months), maxillo-facial prosthesis (two for 18 months), national health planning (two months),

nursing administration (12 months), nutrition (three for 12 months), public health (nine months), rehabilitation in leprosy (five months), rehabilitation of traumatic cases (one month), vital and health statistics (three months).

Guinea 0012 Onchocerciasis Control (1967 -) R

To carry out epidemiological and entomological studies of onchocerciasis and to draw up and implement a programme for the control of the disease.

Guinea 0024 Kindia Institute (1968 -) UNDP/TA UNICEF

To organize the production of freeze-dried smallpox vaccine.

Guinea 0026 Medical School, Conakry (1969 -) R

To develop the Conakry medical school.

Guinea 0027 Development of Basic Health Services (1968 -) R UNDP/TA UNICEF

To evaluate the progress made in the development of rural health services in the demonstration areas, and bring the services to the level required to support a malaria eradication programme and mass campaigns against other diseases; to train rural health personnel; to extend to the whole country the facilities for the diagnosis and treatment of malaria and carry out antimalaria work; and to develop a sanitation programme.

Guinea 0029 Smallpox Eradication (1969 -) R

To carry out a smallpox eradication programme.

Guinea 0200 Fellowships R: Obstetrical nursing education and administration (12 months).

Ivory Coast 0004 Maternal and Child Health Services (1964 -) R

To develop the maternal and child health services and to train personnel. (See page 125.)

Ivory Coast 0008 Vital and Health Statistics (1963 - 1966; 1968 -) UNDP/TA

To develop the vital and health statistical unit of the Ministry of Public Health and train personnel at the National Institute of Statistics.

Ivory Coast 0024 Nutrition Unit, Institute of Public Health, Abidjan (1967 -) UNDP/TA

To establish a nutrition unit in the Institute of Public Health, Abidjan, and to carry out nutrition programmes as part of the public health services.

Ivory Coast 0025 Water Supply and Sewerage, Abidjan (1970 -) UNDP/SF

To formulate a programme for sewerage and storm drainage, carry out surveys and special studies for the preparation of master plans for water supply, sewerage and drainage for Abidjan, and train personnel.

This project incorporates the former environmental sanitation project (Ivory Coast 0012), assisted by WHO from 1963 to 1969.

Ivory Coast 0200 Fellowships R: Midwifery (three for 15 months), public health (four for three weeks), sanitary engineering (three for 12 months).

Kenya 0002 Environmental Sanitation (1960 -) R UNICEF

To improve rural water supply and excreta disposal systems; to organize sanitation services; and to train national personnel.

Kenya 0004 Tuberculosis Control (1957 -) UNDP/TA UNICEF

To continue the country-wide BCG vaccination campaign and to study, in the Muranga pilot area, the possibility of integrating tuberculosis control measures into the health services.

Kenya 0009 Nutrition Survey and Control of Deficiency Diseases (1961 -) R UNICEF (FAO)

To ascertain the main deficiency diseases in Kenya and to study their frequency, severity and distribution; to determine the place of malnutrition in relation to health and socio-economic conditions; to train local personnel for a national nutrition service and to organize a co-ordinated programme to combat malnutrition.

Kenya 0016 Basic Health Services (1962 - 1972) R UNICEF

To strengthen and develop the basic health services, and integrate into them the maternal and child health and public health nursing services; and to train health personnel of all categories, particularly at the Karuri centre.

Kenya 0032 Post-basic Nursing Education (1967 - 1975) R

To develop post-basic nursing education at the University of Nairobi in order to prepare nurse educators and administrators.

Kenya 0034 Medical School, Nairobi (1965 -) R

To develop the medical school, Nairobi.

Kenya 0040 Smallpox Eradication (1968 -) R

To implement the attack phase of a smallpox eradication programme, gradually develop epidemiological surveillance and evaluate the programme.

Kenya 0041 Operational Research on Human and Animal Trypanosomiasis Eradication, Western Provinces (1967 - 1971) UNDP/SF

To develop methods for effective and economical control of human and animal trypanosomiasis in the western provinces.

Kenya 0046 Medical Training Centre (1970 -) R

To develop a training centre for health personnel.

Kenya 0200 Fellowships R: Blood banks (three months), dentistry (12 months), dietetics (15 months), observation of WHO-assisted projects (four months), obstetrics and gynaecology (12 months).

Kenya 0201 Fellowships UNDP/TA: Public cleansing (12 months).

Lesotho 0014 Basic Health Services (1968 - 1973) R UNICEF

To set up in urban and rural areas integrated basic health services, with emphasis on maternal and child health, public health nursing services, organization of laboratory services and training of personnel.

Lesotho 0200 Fellowships R: Health statistics (three months), medical librarianship and hospital records (12 months), public health nursing (three for nine months).

Liberia 0025 National Health Planning

(Feb. - May 1970) Funds-in-trust

WHO provided two consultants—a medical officer and a lay administrator—to evaluate the implementation of the planning process and to make recommendations for the further development of the health services, including the training of personnel for implementing the plan.

Assistance in formulating the national health plan was provided in 1964.

Liberia 0030 Medical School, Monrovia (1969 -) R

To develop the medical school, Monrovia.

Liberia 0033 Development of Basic Health Services

(1968 -) R UNICEF

To develop basic health services in accordance with the national health plan, with emphasis on strengthening basic health service facilities that can support mass campaigns against communicable diseases and into which maternal and child health services can be integrated; to train health service personnel, develop laboratory services and carry out antimalaria activities.

Liberia 0035 Epidemiological Services

(1968 -) UNDP/TA

To co-ordinate the work of existing communicable disease units, set up an epidemiological service, and organize and improve vital and health statistical services.

Liberia 0038 Smallpox Eradication

(1968 -) R

To carry out a smallpox eradication programme.

Liberia 0041 Orthopaedic and Rehabilitation Services

(Oct. 1969 - Jan. 1970) R

WHO provided a consultant to assist in organizing and developing orthopaedic and rehabilitation services and in training personnel. The consultant made recommendations concerning the centralization of treatment of cases requiring orthopaedic assistance and physical rehabilitation, the development of the orthopaedic service, the equipment of the rehabilitation department, and the training of specialized staff. He also gave training in electrotherapy techniques to a number of physical therapists and prepared a list of equipment for the departments of orthopaedic surgery and physical rehabilitation.

Liberia 0200 Fellowships R: Dentistry (12 months), health personnel training (four months), industrial hygiene (nine months), leprosy control (four months), port health (two months), undergraduate medical studies (12 months), X-ray engineering (four months).

Madagascar 0023 Development of Health Services

(1968 -) UNDP/TA

To organize health services and develop rural health units, with major emphasis on maternal and child health, sanitation, nutrition and health education work; and to train staff.

Madagascar 0200 Fellowships R: Anaesthesiology (12 months), drug control (two for 12 months), electroradiology (two for 12 months), immunology and bacteriology (12 months), otorhinolaryngology (12 months), public health (eight months), sanitary engineering (12 months).

Malawi 0007 Public Health Nursing Services (1967 - 1972) R

To develop public health nursing services and public health nursing education programmes at professional and auxiliary levels.

Malawi 0010 Physical Rehabilitation Services

(1969 - 1972) R

To set up a workshop for the production of orthopaedic appliances and to train staff.

Malawi 0011 Smallpox Eradication

(1968 -) R Special Account for Smallpox Eradication

To plan and implement a smallpox eradication programme, and to develop surveillance.

Malawi 0200 Fellowships R: Demography (12 months), International Sanitary Regulations (one month), obstetrics and gynaecology (12 months), public health (13 months), smallpox and BCG vaccination techniques (three months), undergraduate medical studies (two for 18 months).

Mali 0005 Tuberculosis Control (1967 -) R UNICEF

To organize BCG vaccination of the younger age-groups of the urban and rural population; to train staff, and to ensure the maintenance of a satisfactory level of vaccination protection of susceptible persons through the general health services.

Mali 0014 Nursing Education (1964 - 1974) R

To organize nursing services, improve nursing education and develop the training of midwives.

Mali 0022 Smallpox Eradication (1965 -) R

To carry out a smallpox eradication programme.

Mali 0028 National Health Planning

(Feb. - May 1970) Funds-in-trust

WHO provided two consultants—a medical officer and an economist—to evaluate the implementation of the planning process and to make recommendations for the further development of the health services, including the training of personnel for implementing the plan.

Assistance in formulating the national health plan was provided in 1963.

Mali 0032 Development of Basic Health Services

(1969 -) R UNICEF

To implement the national health plan, particularly as regards the development of a network of basic health service facilities capable of supporting mass campaigns against communicable diseases and of assuming responsibility for maternal and child health care; and to improve methods for the diagnosis and treatment of malaria, establish a central environmental health unit, improve sanitation, and train health personnel of all categories.

Mali 0035 Medical Assistants' School, Bamako (1969 -) R

To develop the medical assistants' school, Bamako.

Mali 0200 Fellowships R: Endemic disease control (five for 10 months), nursing (two for 12 months).

Mauritania 0008 Nursing Education (1963 - 1974) R UNICEF

To organize nursing services and improve nursing education.

Mauritania 0010 Development of Basic Health Services
(1968 -) R UNICEF

To develop basic health services in a demonstration area, and to integrate maternal and child health work into those services; to improve the diagnosis and treatment of malaria; and to train personnel.

Mauritania 0012 Smallpox Eradication (1968 -) R

To implement the attack phase of the national smallpox eradication programme, develop epidemiological surveillance and evaluate the programme.

Mauritania 0200 Fellowships R: Endemic disease control (one for one month, two for 10 months), nursing education (12 months), pharmacy (12 months), tropical ophthalmology (12 months).

Mauritius 0002 Tuberculosis Control

(1956 - 1959; 1960 - 1964; 1966 -) R UNDP/TA

To integrate tuberculosis control (BCG vaccination, bacteriological diagnosis, treatment and recording and surveillance of cases) into the regular work of peripheral health establishments.

Mauritius 0021 Public Health Services

(1969 - 1975) UNDP/TA

To undertake the reorganization, at all levels, of health services in which emphasis will be placed on the development of comprehensive and integrated peripheral services capable of undertaking malaria vigilance, control of other communicable diseases, a nutrition programme and health education; to train personnel, and to establish a division of environmental health.

This project incorporates project Mauritius 0015 (national environmental sanitation programme) which was assisted by WHO between 1965 and 1969.

Mauritius 0023 Nursing Education (1970 - 1976) R

To develop a basic programme for the education of nurses and midwives.

Mauritius 0024 Hospital Services (1969 - 1971) R

To recruit medical and paramedical staff and train paramedical staff for hospital services.

Mauritius 0200 Fellowships R: Dental health (12 months), laboratory techniques (six for 12 months), medicine (12 months), microscope maintenance (six weeks), nursing (six months), nutrition (two for 12 months), occupational therapy (12 months), otorhinolaryngology (12 months), radiography (two for 15 months).

Niger 0005 Tuberculosis Control (1964 -) UNDP/TA UNICEF

To study the application of simplified and standardized tuberculosis control measures in a pilot area, and to set up a tuberculosis control programme to cover the whole country.

Niger 0017 National Health Planning

(June - Aug. 1970) Funds-in-trust

WHO provided two consultants—a medical officer and an economist—to evaluate the implementation of the planning process and to make recommendations for the further development of the health services, including the training of personnel for implementing the plan.

Assistance in formulating the national health plan was provided in 1964.

Niger 0018 Environmental Sanitation (1966 -) R UNICEF

To establish a central environmental health unit, plan a long-term sanitation programme, with emphasis on the development of water supplies, and train sanitation personnel.

Niger 0023 School of Nursing, Niamey (1966 - 1972) UNDP/SF

To reorganize and develop the school of nursing, Niamey.

Niger 0025 Development of Basic Health Services

(1969 -) R

To expand basic health services in accordance with the four-year health development plan, particularly with regard to maternal and child health and school health services, and to train staff in the demonstration areas.

Niger 0030 Smallpox Eradication (1967 -) R

To carry out a smallpox eradication programme.

Niger 0200 Fellowships R: Dental surgery (17 months), endemic disease control (four for 10 months), environmental sanitation (two for 12 months), maternal and child health (three months), microscope maintenance (six weeks), midwifery (two years), social sciences (two for 12 months), tropical ophthalmology (two for 12 months).

Nigeria 0028 Health Education (1962 - 1972) UNDP/TA

To strengthen the federal health education and school health education bureau and to provide advisory services in these fields to the states.

Nigeria 0060 Mental Health, University of Ibadan

(1968 -) R

To develop postgraduate teaching in the Department of Psychiatry, Neurology and Neurosurgery of the University of Ibadan Medical School.

Nigeria 0071 Health Components in the Kainji Lake Research Project (1968 - 1971) UNDP/SF (FAO)

To provide for co-ordination of the health components of the Kainji Lake research project, which is being undertaken with assistance from the United Nations Development Programme (Special Fund component) with FAO as the executing agency. In 1966 WHO provided a consultant who made a survey of health conditions and services in the project area.

Nigeria 0073 Medical School, Zaria (1967 -) R

To develop the medical school, Zaria.

Nigeria 0074 Development of Basic Health Services, Western State (1968 -) R UNDP/TA UNICEF

To develop basic health services, with emphasis on building up the rural health infrastructure, and to train personnel, using the experience obtained in the demonstration area; to train sanitation staff, set up a sanitary engineering unit and plan a long-term sanitation programme.

Nigeria 0075 Development of Basic Health Services, North-Central State (1968 -) R UNDP/TA UNICEF

To plan health services; to improve health administration; to train professional and auxiliary health staff in preventive and curative medicine; to develop the rural health infrastructure; and to carry out environmental sanitation work.

Nigeria 0077 Development of Basic Health Services, Mid-west State (1968 -) R UNICEF

To plan and develop health services, to improve health administration and to train personnel of all categories.

Nigeria 0078 Development of Basic Health Services, Federal
(1968 -) R

To co-ordinate activities for the development of basic health services and training of personnel, and to organize antimalaria work as required by the different states.

Nigeria 0079 Epidemiological Services, Federal
(1968 -) UNDP/TA

To organize epidemiological services for communicable disease control programmes, including the elimination of the residual foci of yaws; to develop a pattern for integrated laboratory services; and to train personnel.

Nigeria 0080 Epidemiological Services, Western State
(1968 -) R

To develop epidemiological services; to plan, co-ordinate and evaluate measures for the control of communicable diseases, including leprosy and tuberculosis; and to develop vital and health statistics services.

Nigeria 0081 Epidemiological Services, Mid-west State
(1968 -) UNDP/TA

To organize epidemiological services for communicable disease control programmes, including elimination of residual foci of yaws and control of leprosy and tuberculosis.

Nigeria 0082 Epidemiological Services, North-Central, Kano and North-Eastern States (1968 -) R

To organize epidemiological services for communicable disease control programmes, including elimination of residual foci of yaws and control of leprosy; and to develop vital and health statistics services.

Nigeria 0084 Federal School of Radiology (1968 - 1972) R

To train technicians in radiography and in the maintenance and repair of X-ray and electromedical equipment.

Nigeria 0087 Master Plans for Waste Disposal and Drainage, Ibadan (1968 -) UNDP/SF

To carry out engineering feasibility studies required for the preparation of master plans, phased investment studies and a construction programme for sewerage, drainage and solid waste disposal systems for the city of Ibadan; and to formulate policy on related legal, managerial and financial matters.

Nigeria 0088 Medical College, Lagos (1968 -) R

To develop the teaching of anatomy at the medical school of the University of Lagos.

Nigeria 0092 Smallpox Eradication (1968 -) R

To carry out a smallpox eradication programme.

Nigeria 0098 Development of Basic Health Services, Kano State (1969 -) R UNICEF

To develop basic health services, with emphasis on training all categories of personnel in preventive and curative medicine and to build up the rural health infrastructure and strengthen its supervision.

Nigeria 0104 Consultative Services in Hospital Architecture
(May - June 1970) R

A consultant was provided to assist in the preparation of the overall architectural plan for the University of Lagos medical school.

Nigeria 0200 Fellowships R: Epidemiology (four months), food science and applied nutrition (two for eight months), haematology (12 months), malaria immunology (four months), microscope maintenance (eight for six weeks), nursing education and services (four months), nursing and midwifery education (two for 12 months), nutrition (nine months), pharmaceutical manufacture (10 weeks), public health (three for nine months), rehabilitation of traumatic cases (one month), sanitation (one for three months, one for 11 months), tuberculosis (six weeks).

People's Republic of the Congo 0018 Development of Basic Health Services (1965 - 1972) R UNICEF

To organize health services, with emphasis on maternal and child health, tuberculosis control, environmental health, health education and nutrition, and to train staff.

People's Republic of the Congo 0022 Nursing Education
(1967 - 1974) R UNICEF

To upgrade training programmes for nurses, midwives and social workers to the level for state registration.

People's Republic of the Congo 0200 Fellowships R: Midwifery (nine months), public health (12 months), statistics (one for six months, one for 12 months).

Réunion 0200 Fellowships R: Paediatric and public health nursing (two for six months).

Rwanda 0001 Tuberculosis Control
(1965 -) UNDP/TA UNICEF

To build up a national tuberculosis control programme, with emphasis on BCG vaccination, and to train nursing and auxiliary staff in methods of diagnosis and treatment.

Rwanda 0005 Medical School, Butare
(1967 -) R UNDP/TA

To develop the medical school of the University of Butare and promote the teaching of public health there and at the other institutions for training health personnel. The professor of public health assigned to the project also assists with public health administration and health planning.

Rwanda 0008 Smallpox Eradication
(1968 -) R Special Account for Smallpox Eradication

To carry out a smallpox eradication programme.

Rwanda 0011 Development of Basic Health Services
(1969 - 1973) R UNICEF

To extend integrated basic health services, particularly in the rural areas, with emphasis on maternal and child care and nutrition work; and to train medical students and all categories of health personnel.

Rwanda 0200 Fellowships R: Nutrition (12 months).

Senegal 0016 Nutrition Education (1964 -) R

To develop nutrition training in the University of Dakar and specialized institutions.

Senegal 0022 Master Plan for Water Supply and Sewerage for Dakar and Surrounding Areas (1966 -) UNDP/SF

To develop a phased improvement programme within a long-term plan for water supply and sewerage for Dakar and the surrounding areas. The work also includes management, legal and finance studies for the development of a self-supporting water and sewerage authority.

Senegal 0026 Development of Basic Health Services
(1968 -) R

To develop the basic health services to bring them to the level required to support mass campaigns against communicable diseases, paying particular attention to maternal and child health, the national tuberculosis control programme, treatment of malaria and the training of personnel.

The project incorporates projects Senegal 0012 (public health nursing) and Senegal 0019 (tuberculosis control), assisted by WHO between 1964 and 1969.

Senegal 0027 Institute of Tropical Odontology and Stomatology, University of Dakar (1967; 1970 -) R

To establish an institute of tropical odontology and stomatology at the University of Dakar and to train personnel in dental health.

Senegal 0029 Smallpox Eradication (1970 -) R

To carry out a smallpox eradication programme.

Senegal 0200 Fellowships R: Anaesthesiology and resuscitation (12 months), biological laboratory techniques (nine months), dental surgery (12 months), gastroenterology (two months), obstetrics and gynaecology (12 months).

Seychelles 0010 Development of Basic Health Services
(1967 - 1970) UNDP/TA

To develop the health services, giving priority to the treatment and control of communicable diseases, the organization of public health nursing and environmental sanitation services, and the training of personnel.

Sierra Leone 0007 Nursing Education (1961 - 1974) R UNICEF

To develop nursing education programmes, with emphasis on the preventive and curative aspects of nursing.

Sierra Leone 0022 National Health Planning
(June - Oct. 1970) Funds-in-trust

WHO provided two consultants—a medical officer and a lay administrator—to evaluate the implementation of the planning process and to make recommendations for the further development of the health services, including the training of personnel for implementing the plan.

Assistance in formulating the national health plan was provided in 1963.

Sierra Leone 0029 Development of Basic Health Services
(1968 -) R UNICEF

To implement the national health plan, particularly in relation to further development of basic health services in the demonstration area in the Port-Loko district; to train personnel; and to strengthen specialized services, integrating them into a general service which can support mass campaigns for the control or eradication of communicable diseases.

Sierra Leone 0030 Epidemiological Services
(1968 -) R UNDP/TA

To organize and develop epidemiological services to support mass campaigns for the control of communicable diseases, including programmes to eliminate residual foci of yaws; to strengthen health laboratories and vital and health statistics services, and to train staff.

Sierra Leone 0031 Mental Health (April - Aug. 1970) R

WHO provided a consultant to study the situation regarding mental health work in the country and to make recommendations for the future development of the mental health services.

Sierra Leone 0033 Smallpox Eradication (1968 -) R
To carry out a smallpox eradication programme.

Sierra Leone 0038 Medical School, Freetown (1969 -) R
To study the possibility of establishing a medical school.

Sierra Leone 0200 Fellowships R: Dental public health (nine months), food science and applied nutrition (eight months), microscope maintenance (six weeks), obstetrics and gynaecology (10 weeks), occupational therapy (four weeks), public health (two for nine months), water resources engineering (12 months).

Sierra Leone 0201 Fellowships UNDP/TA: Surgery (12 months).

St Helena 0200 Fellowships R: Pharmacy (12 months).

Swaziland 0012 Development of Basic Health Services
(1969 -) UNDP/TA

To develop basic health services, with emphasis on the training of personnel, including laboratory assistants.

This project incorporates the former tuberculosis control project (Swaziland 0002), assisted by WHO from 1962 to 1969.

Swaziland 0014 Nursing Education (July - Sept. 1970) R

WHO provided a consultant for eight weeks to review programmes for the training of nursing personnel in relation to nursing service needs in the country.

Swaziland 0200 Fellowships R: Obstetrics and gynaecology (12 months), undergraduate medical studies (three for 12 months).

Tanzania 0022 Medical School, Dar es Salaam
(1965 -) UNDP/TA

To develop the medical school, Dar es Salaam.

Tanzania 0023 Nutrition Programme, Tanganyika
(1963 -) R UNICEF (FAO)

To study the nutritional status of the population, in particular in the pilot area of Dodoma; to train staff in nutrition, and to launch a programme to control the main deficiency diseases.

Tanzania 0039 Schistosomiasis Control, Tanganyika
(1967 -) R

To evaluate the extent of the schistosomiasis problem, starting in the Mwanza district, and to draw up, for that district, a control programme which could serve as a model for a future programme covering all endemic areas. (See page 125.)

Tanzania 0043 Smallpox Eradication, Tanganyika
(1968 -) R Special Account for Smallpox Eradication
To carry out a smallpox eradication programme.

Tanzania 0048 Epidemiological Services, Tanganyika
(1969 -) R

To develop epidemiological services for the control of communicable diseases, including communicable eye diseases and tuberculosis; and to develop vital and health statistics services and train personnel.

Tanzania 0052 Nursing Education, Tanganyika
(1970 - 1975) R

To train nursing and midwifery personnel.

Tanzania 0200 Fellowships R: Food science and applied nutrition (eight months), laboratory techniques (12 months), medical records (10 months), medicine (two for 12 months), obstetrics and gynaecology (two for 12 months), physiology and pharmacology (12 months), psychiatry (12 months), public health (nine months), radiology (12 months), rehabilitation of traumatic cases (one month), surgery (12 months).

Togo 0013 Development of Nursing Services (1963 - 1974) R

To organize nursing and midwifery education programmes and services.

Togo 0029 Development of Basic Health Services (1968 -) R UNDP/TA UNICEF

To develop basic health services which can provide support for mass campaigns against communicable diseases; to improve facilities for improving the diagnosis and treatment of malaria; to develop a sanitation programme; and to train personnel.

Togo 0030 Epidemiological Services (1968 -) R UNDP/TA UNICEF

To establish epidemiological services for co-ordinating all communicable disease control work; to strengthen health laboratory services; and to train personnel.

Togo 0032 Smallpox Eradication (1968 -) R

To carry out a smallpox eradication programme.

Togo 0200 Fellowships R: Biochemistry (13 months), dental prosthetics (10 months), hospital administration (12 months), kinesitherapy (12 months), laboratory techniques (one for 11 months, one for 12 months), medicine (three for 12 months), nursing education and administration (12 months), statistics (12 months), undergraduate medical studies (seven for 12 months).

Uganda 0024 Health Education (1965 -) UNDP/TA

To develop the health education unit in the Ministry of Health, extend the use of health education methods and expand health education training at the University of East Africa.

Uganda 0028 Master Plans for Water Supply and Sewerage for the Greater Kampala and Jinja Areas (1968 -) UNDP/SF

To make engineering and feasibility studies required for the preparation of master plans, phased investment studies and a construction programme for water supplies and sewerage for the Greater Kampala and Jinja areas; and to formulate policies on related legal, managerial and financial matters. (See page 126.)

Uganda 0035 Development of Basic Health Services (1968 - 1975) R UNICEF

To develop basic health services, giving priority to rural health services, environmental health work and training of personnel; to evaluate activities in a health service demonstration area and to bring the services to the level required for support of mass campaigns against communicable diseases.

Uganda 0036 Epidemiological Services (1968 -) R UNDP/TA

To develop epidemiological services to the level required to co-ordinate measures against communicable diseases; to develop vital and health statistics services; and to strengthen health laboratory services.

Uganda 0041 Smallpox Eradication

(1968 -) R Special Account for Smallpox Eradication

To complete the attack phase of the smallpox eradication programme, progressively develop epidemiological surveillance, and evaluate the programme.

Uganda 0200 Fellowships R: Dental surgery (12 months), food science and applied nutrition (eight months), heart diseases (13 weeks), leprosy control (two for four months), microscope maintenance (four for six weeks), otorhinolaryngology (one month), pharmacology (12 months), public health demonstration areas (13 days), statistics (nine months), trachoma and corneal grafts (six weeks), virology (12 months).

Upper Volta 0007 Smallpox Eradication (1967 -) R

To carry out a smallpox eradication programme.

Upper Volta 0011 Nursing Education (1968 - 1974) UNDP/TA

To revise and upgrade programmes for the preparation of nurses and midwives; and to develop practical training facilities in hospitals, maternity units and health centres.

Upper Volta 0020 Tuberculosis Control (1968 -) R UNICEF

To carry out a country-wide BCG vaccination campaign, and to develop a tuberculosis programme, beginning in a pilot area. The programme will be based on decentralization of initial diagnosis and ambulatory treatment of patients, and it is proposed to set up a specialized reference centre for suspected cases and patients who have completed their treatment, and to establish a simplified recording and reporting system to facilitate continuous evaluation of the programme.

Upper Volta 0021 Development of Basic Health Services (1968 -) R UNDP/TA Special Account for the Yaws Programme UNICEF

To develop the health services, with emphasis on maternal and child health, environmental sanitation and staff training; and to extend integrated health services to rural areas by establishing a demonstration and operational research area.

Upper Volta 0200 Fellowships R: Dental surgery (12 months), medicine (seven for 12 months), pharmacy (two for 12 months), sanitary engineering (12 months), undergraduate medical studies (10 months).

Zambia 0009 Public Health Nursing Services (1965 - 1972) R

To develop a public health nursing service and to establish education and training programmes to meet its needs.

Zambia 0010 Medical School, Lusaka (1968 -) R

To develop the medical school, Lusaka.

Zambia 0013 Smallpox Eradication

(1967 -) R Special Account for Smallpox Eradication

To implement the smallpox eradication programme launched in 1965, and to build up an epidemiological surveillance system. (See page 124.)

Zambia 0014 Development of Basic Health Services (1969 - 1972) R

To evaluate the health services and bring them to the level required for support of mass campaigns against communicable diseases; to improve facilities for the diagnosis and treatment of malaria, develop the sanitation programme and train health inspectors.

Zambia 0017 National Health Planning
(1969 - 1972) UNDP/TA

To plan and co-ordinate a national health programme within the framework of the national development plan.

Zambia 0018 National Food and Nutrition Commission
(1969 -) UNDP/SF (FAO)

To take measures to improve food consumption patterns in order to raise the nutritional status of the population. FAO is the executing agency for this project, which is assisted by the United Nations Development Programme (Special Fund component).

Zambia 0200 Fellowships R: Health education (two for 14 weeks), health visiting (12 months), leprosy control (eight for four months), nursing (16 months), public health (nine months).

AFRO 0053 Epidemiological Surveillance Centres
(1960 -) R

To assist in the collection, analysis and evaluation of statistical and epidemiological data as a basis for planning, and in the implementation and co-ordination of epidemiological surveillance for the control of communicable diseases in East-Southern and West-Central Africa.

AFRO 0087 Centre for Post-basic Nursing Education, University of Ibadan (1962 - 1973) R UNICEF

To develop the Department of Nursing at the University of Ibadan as a regional centre for preparing nurses of a high educational level to provide professional guidance in the improvement and extension of nursing services and education.

AFRO 0094 Schistosomiasis Consultative Services
(1967 -) R

To assist in assessing the schistosomiasis problem in various countries, in studying the epidemiological pattern of the disease and in evolving suitable control methods; also to carry out surveys on health problems resulting from the development of power or irrigation schemes.

AFRO 0101 Cerebrospinal Meningitis Control
(1960 -) R

To assist in controlling epidemics of cerebrospinal meningitis in countries of the Region.

AFRO 0105 Training Centre for Health Service Personnel
(English Language), Lagos (1961 -) R

To organize special courses for various categories of public health workers required for the development of basic health services, particularly in the countries of the Region, and to provide training in malariology and antimalaria measures and techniques.

AFRO 0125 Treponematoses Consultative Team (1965 -) UNDP/TA

A mobile team to evaluate treponematoses control projects and advise governments on their further development, and to provide material for immunological surveillance studies of certain other communicable diseases.

AFRO 0128 Training Centre for Health Service Personnel
(French Language), Lomé (1962 -) R

To organize special courses for public health workers required for the development of basic health services, particularly in the countries of the Region; to provide training in malariology and antimalaria measures and techniques.

AFRO 0131 Onchocerciasis Consultative Services
(1966 -) R UNDP/TA

To assist governments in assessing the problem of onchocerciasis and in drawing up control programmes.

AFRO 0142 Joint FAO/WHO/OAU Regional Food and Nutrition Commission for Africa (1964 -) R

The Commission, jointly sponsored by FAO, WHO and the Scientific, Technical and Research Commission of the Organization of African Unity, facilitates contacts between specialists interested in nutrition problems in Africa. The Commission is also responsible for the preparation and distribution in two languages of material on all nutrition work in Africa.

AFRO 0143 Smallpox Eradication

(1965 -) R Special Account for Smallpox Eradication
To assist in planning and/or carrying out smallpox eradication projects.

AFRO 0156 Malaria Training of Public Health Personnel
(1964 -) R

To enable senior health personnel to study methods employed, in the countries of the Region, for the development of basic health services for the support of mass campaigns against communicable diseases.

AFRO 0162 Plague Control (1968 -) R

To assist in controlling epidemics of plague in countries of the Region.

AFRO 0167 Consultative Services in Nutrition
(1965 -) R

To assist and advise in the development of nutrition work in national public health services; to organize nutrition units, train local staff and develop nutrition education and nutrition rehabilitation programmes.

AFRO 0171 Leprosy Consultative Services
(1968 -) UNDP/TA

To assist governments in assessing the leprosy situation in their countries, in planning and implementing leprosy control programmes, in standardizing methods and criteria, and in evaluating the results.

AFRO 0174 Assistance to the Economic Commission for Africa in Vital and Health Statistics (1965 -) R

To assist with courses for training middle-grade and clerical personnel in vital and health statistics at the international statistical training centres at Yaoundé (Cameroon) and Dar es Salaam (United Republic of Tanzania).

AFRO 0178 Trypanosomiasis Consultative Services
(1969 -) R

To study the trypanosomiasis situation in affected countries, locating foci of the disease and determining their importance; to study vector ecology, seasonal variations in transmission, methods for treating patients and controlling vectors; and to assist governments in planning control programmes.

AFRO 0196 Meeting of Professors of Public Health, Brazzaville
(3 - 10 Nov. 1970) R

The second meeting of professors of public health was attended by eight professors from eight faculties of medicine in the Region and eight staff members of projects assisted by WHO. The subject of the meeting was "the choice of the most appropriate epidemiological techniques for the study of priority problems of the Region".

AFRO 0197 Centres for Post-basic Nursing Education, West and East-Central Africa (1967 - 1975) R

To assist in establishing centres which will provide facilities for post-basic education in all fields of nursing for French-speaking nurses and midwives from African countries.

AFRO 0204 Regional Malaria Consultative Team
(1967 -) R

To provide for the assessment of the malaria situation in the countries of the Region, and to assist in the planning, implementation and evaluation of antimalaria activities feasible under local conditions.

AFRO 0211 Workshops on Medical Education Methodology
(1969 -) R

To enable medical school teachers to study teaching methods and to acquaint themselves with new educational techniques.

AFRO 0212 Meeting of Deans of Faculties of Medicine in the African Region, Brazzaville (24 - 27 Nov. 1970) R

The meeting, which was the second of the kind, was attended by 12 deans of faculties of medicine in the Region. The main subject of discussion was the role of faculties of medicine in national health planning. In addition, an assessment was made of the progress accomplished since the first meeting in 1968.

AFRO 0213 Staff Exchanges between Medical Schools of the African Region (1968 -) R

To provide the opportunity for interchange of views and experience amongst teachers in medical schools in the Region.

AFRO 0215 Epidemiological Services (1968 -) R

To assist countries of the Region in studying local epidemiological problems and to recommend remedial measures.

AFRO 0217 Virology Consultative Services (1969 -) R

To assist governments in carrying out epidemiological surveys as a basis for controlling virus diseases.

AFRO 0218 Seminar on Leprosy, Kampala
(9 - 14 March 1970) R

The purpose of the seminar was to study the operational and administrative methods which could be applied in solving the leprosy problem in the countries of the Region. There were 22 participants from Burundi, Cameroon, Central African Republic, Chad, Congo (Democratic Republic of), Ghana, Guinea, Ivory Coast, Liberia, Madagascar, Malawi, Mali, Niger, People's Republic of the Congo, Togo, Uganda, United Republic of Tanzania, Upper Volta and Zambia, and from an inter-country health organization. The main points of discussion were the epidemiological aspects and control of leprosy in the African Region, treatment, planning, programming and evaluation of control programmes, and their integration into the public health services. A number of recommendations

were made, concerning, *inter alia*, the integration of control work into the basic health services, operational and epidemiological evaluation, use of epidemiological services in assisting the programmes, training, health education, and controlled trials with antileprosy drugs.

WHO provided two consultants, two temporary advisers and the services of staff members, and met the cost of attendance of the participants.

AFRO 0219 Water Supply and Sewerage Consultative Services
(1969 -) R

To assist governments in carrying out studies on water supply and sewerage programmes and to provide for the planning, organization, implementation and assessment of such programmes in the Region.

AFRO 0220 Workshop on National Health Planning, Brazzaville
(1 - 12 June 1970) R

The purpose of the workshop—the first to be held in the African Region—was to define a methodology of national health planning applicable to the Region. It was conducted in English and French. There were 10 participants (nine medical officers and one non-medical) from Dahomey, Ghana, Liberia, Mali, Sierra Leone, Swaziland, Togo, Uganda, United Republic of Tanzania, and Zambia.

The participants discussed planning methods used in Africa and in other regions and studied the various stages of planning (preparatory phase, plan formulation, implementation of the plan and evaluation) in collaboration with the WHO consultants and staff members. In particular, they investigated the most practical and appropriate means of commencing these stages in the African Region and studied the training of personnel in health planning.

WHO provided five consultants and met the cost of attendance of the participants.

AFRO 0221 Intensive Orientation Course on the Organization and Administration of Health Services, Dakar
(1 - 31 Oct. 1970) R

The purpose of the course, which was given in English and French and which was the first of its kind to be held in the African Region, was to provide training for national health administrators in the organization and administration of health services.

WHO provided lecturers and fellowships for 16 trainees from Central African Republic, Chad, Congo (Democratic Republic of), Dahomey, Ghana, Liberia, Madagascar, People's Republic of the Congo, Rwanda, Senegal and Swaziland.

AFRO 0222 Faculty of Medicine, University of East Africa, Kampala (1968 -) R

To assist the Faculty of Medicine of the University of East Africa.

AFRO 0223 International Children's Centre Courses
(1963 -) R

To enable African doctors and paramedical personnel to attend refresher courses organized by the International Children's Centre both in Africa and in Paris.

In 1970, WHO met the cost of attendance of 22 participants (from Burundi, Congo (Democratic Republic of), Gabon, Ivory Coast, Mauritania, Niger, Rwanda and Senegal) at the course on epidemiology applied to the health problems of children in Africa, held in Abidjan from 12 to 31 October.

AFRO 0225 Consultative Services in Pharmacology and Toxicology (1969 -) R

To study the scope of activities in quality control of pharmaceuticals and advise on the development of suitable control laboratory facilities on a regional basis.

AFRO 0226 Meeting of Directors of Nursing Schools, Brazzaville (21 - 28 July 1970) R

The purpose of the meeting was to consider a methodology, that could be recommended to their governments by the participants of the meeting, for the solution of problems related to training of nursing personnel. The meeting was attended by 30 directors and teachers of nursing schools from Botswana, Cameroon, Central African Republic, Chad, Dahomey, Gabon, Gambia, Ghana, Ivory Coast, Kenya, Lesotho, Mali, Mauritania, Mauritius, Niger, Nigeria, People's Republic of the Congo, Réunion, Sierra Leone, Togo, Uganda, United Republic of Tanzania, Upper Volta and Zambia, and by an observer from the United States of America.

WHO provided a consultant and six temporary advisers, and met the cost of attendance of the participants.

AFRO 0227 Schools of Medicine and other Teaching Institutions (1968 -) R

To assist in providing health teaching institutions with educational material, textbooks, and laboratory equipment.

AFRO 0231 Centre for Training Technicians in the Repair and Maintenance of Medical Equipment (1970 -) R

To assist in training technicians for the installation, maintenance and repair of X-ray apparatus and other electro-medical equipment.

AFRO 0233 Pilot Studies on the Needs in Health Personnel (1970 - 1972) R

To undertake pilot studies on the existing situation and on the additional needs in health personnel specially oriented for service under local conditions.

AFRO 0243 Consultative Services for Economic Development Projects (1970 -) Special Account for Servicing Costs

To study the health components and to assess the public health implications of socio-economic development schemes in preparation and under implementation in the countries of the Region.

REGION OF THE AMERICAS

Argentina 0100 Communicable Disease Control (1969 - 1971) PAHO

To strengthen the epidemiological services, develop programmes for the control and eradication of communicable diseases, co-ordinate activities for the control or eradication of communicable diseases with other public health activities, and improve the reporting of those diseases and the application of the International Sanitary Regulations.

Argentina 0200 Malaria Eradication Programme (1951 -) PAHO UNICEF

To eradicate malaria from the country by stages.

Argentina 0300 Smallpox Eradication (1954 - 1972) R

To vaccinate at least 90 per cent. of the population through the regular health services in three years, and to consolidate the results by vaccination of newborn babies, revaccination of 20 per cent. of the population of each area annually and application of appropriate quarantine measures; and to organize provincial epidemiological and supporting services.

Argentina 0400 Tuberculosis Control (1960 - 1971) R

To carry out a tuberculosis control programme as part of the work of the general health services.

Argentina 0700 Pan American Zoonoses Centre (1966 - 1972) UNDP/SF PAHO

To strengthen the Pan American Zoonoses Centre (see project AMRO 0700 below).

Argentina 0703 Antirabies Vaccine (1968 - 1970) R

The purpose was to establish a centre for the production of antirabies vaccine for human use to meet emergency needs in the countries of the Region. The Organization provided consultants, a grant, and advisory services by staff of the Pan American Zoonoses Centre (project AMRO 0700).

The centre, which was set up in the Institute of Microbiology, produced 197 495 doses of vaccine in 1968 and 166 533 in 1969. Each batch was checked for potency and safety at the Pan American Zoonoses Centre. Under an agreement with the Organization, the Institute holds 5000 doses of vaccine in reserve for distribution to governments for use in emergency situations.

Argentina 2100 Environmental Sanitation (1967 - 1971) PAHO

To strengthen the sanitation services and increase the number of available qualified personnel at the professional, technical and auxiliary levels.

Argentina 2200 Water Supplies (1961 - 1972) R

To prepare and implement plans for the construction and expansion of water supply and sewerage systems. (See page 135.)

Argentina 3100 Health Services (1966 - 1972) R PAHO

To improve the health services. Under this project assistance is provided to the Ministry of Welfare and Public Health in health planning, the supervision and evaluation of programmes, training and research.

Argentina 3101 Fellowships R: Hospital administration (one for four weeks, one for five weeks, one for nine months), laboratory services (six months), medical librarianship (five months), neonatology (one month), nursing education (12 months), paediatrics (one for three months, one for five months), public administration (two for four months), public health administration (11 months), public health nutrition (one for six weeks, one for two months), radiation protection (12 months), sanitary engineering (one week); PAHO: Epidemiology (12 months), vaccine and sera preparation (six weeks).

Argentina 3102 Health Services, North-western Provinces (1957 - 1969) UNDP/TA PAHO UNICEF

The original aim was to organize an integrated health service in the Province of El Chaco, provide for the training of personnel and update health legislation. In 1964 the project was extended to the Province of Tucumán, and in 1966 to the Provinces of Catamarca, Jujuy, Salta and Santiago del Estero, with the additional aim of formulating and executing an integrated health plan for the provincial health services in the north-west. The Organization provided a public health physician, an engineer and a public health nurse, a consultant and fellowships, as well as advisory services of staff members.

During the initial period, the national health services were decentralized to the provincial level in El Chaco, the process being completed in 1961 for the medical care services and in 1963 for other services. The provincial health service was reorganized and four health districts were established. The water supply and sewerage services were improved, as were the services for latrine construction, garbage disposal and food hygiene in urban and rural areas. A total of 504 nursing auxiliaries and sanitation inspectors were trained in the country, and 13 officials were awarded fellowships for training abroad. Legislation was issued on the organization of the provincial ministries of health, and new standards for their operation were established.

Between 1964 and 1969 the administration of the provincial health services was improved, and progress was made in decentralizing national services and regionalizing provincial services in Tucumán, Catamarca, Jujuy, Salta and Santiago del Estero. Implementation of the plans made in 1966 began in 1967. The Provinces of Catamarca and Santiago del Estero formulated health plans for the period 1969-1972. Twenty professional workers were trained in the five provinces, and 1449 health workers received training in 57 courses of varying duration and content.

A mechanism for inter-provincial co-ordination was established in the health ministries of two provinces. The work of various services was extended, particularly in the fields of medical care, maternal and child health, nutrition, nursing, communicable disease control, environmental sanitation, and statistics.

Argentina 3400 Health Education Planning (1970 - 1971) UNDP/TA

To study the existing programme of health instruction in primary and secondary schools, the training of school-teachers for health education, and co-ordination in this field between the ministries concerned with education and with health.

Argentina 3500 Health Statistics (1960 - 1972) PAHO

To improve and develop the statistical services, and to train technical and auxiliary personnel, in accordance with a five-year plan.

Argentina 3504 Data Processing Centre (1968 - 1972) R

To develop a data processing centre for collecting and processing data in the health field, effectively using computers existing in the various health agencies, training personnel in systems analysis, programming and general administration of computer systems, and carrying out research on the use of computers in the health sciences.

Argentina 4300 Mental Health (1966 - 1972) PAHO

To formulate a national mental health plan and to carry out epidemiological research on mental illness.

Argentina 4500 Radiation Protection (1967 - 1972) PAHO

To develop radiation protection services in hospitals and other institutions and to train personnel for these services.

Argentina 4800 Medical Care Services (1966 - 1970) PAHO

The purpose was the conduct of studies and research on problems of medical care, including its organization, resources available, possibility of integration into the general health services, and training of personnel. The Organization provided a nurse in 1966 and 1967, two consultants, fellowships, supplies and equipment, and advisory services by staff members.

Regional and local planning studies were made, including studies for the construction, enlargement or remodelling of three university hospitals, other hospitals in the federal capital and in provincial capitals, and seven health centres. Continuous co-operation was given in the planning for the National Department of Mental Health and in the survey of hospital facilities being conducted by the Secretary of Public Health as a basis for formulating the country's programme of hospital construction and modernization. Assistance was provided to a course in nursing administration, supervision and education offered by the Buenos Aires Municipality, to a seven-week course in the administration of nursing services, at San Miguel de Tucumán, and to a practical course on the care of newborn babies for midwives of the provincial maternity hospital in Córdoba. Five intensive four-month courses in hospital administration were organized for a total of 132 hospital directors, as well as a course in hospital statistics. In 1967, assistance was furnished to the newly established Latin American Centre for Medical Administration.

Argentina 4803 Latin American Centre for Medical Administration (1967 -) R PAHO Grant to PAHO: Government of Argentina

To develop the Latin American Centre for Medical Administration that was set up in 1967 to study national problems in the provision and administration of medical care services, train personnel for technical and administrative posts in hospitals and other health institutions, and serve as a Latin American centre for operational research in the management of medical services and for training in medical administration.

Argentina 5000 Rehabilitation (1966 -) UNDP/TA

To train technicians in prosthesis and in the production of orthopaedic devices.

Argentina 6100 School of Public Health (1958 - 1972) R

To strengthen the School of Public Health of the University of Buenos Aires, in order to enable it to prepare adequately professional and auxiliary health workers for the country's developing health programmes.

Argentina 6200 Medical Education (1958 - 1972) R

To improve the medical education programmes of the schools of medicine by planning teaching and scientific research so as to meet the country's needs for physicians and research workers; and to improve the organization and administration of the schools.

Argentina 6201 Health Manpower Study (1968 - 1972) R

To make a study of health manpower requirements and the means of meeting them; and to collect data to enable the medical education and health personnel training programmes to be reoriented.

Argentina 6202 Centre for Biostatistics and Demography (1968 - 1972) PAHO

To develop the Centre for Biostatistics and Demography that was set up in 1969 in the Faculty of Medical Sciences of the University of Buenos Aires.

Argentina 6301 Training of Nursing Personnel (1960 - 1969) PAHO UNICEF

The purpose was to train professional and auxiliary nursing personnel. The Organization provided a nursing adviser from September 1960 to November 1962, an adviser in nursing education between January 1966 and December 1968 and supplies and equipment, as well as advisory services by zone office and project staff. UNICEF supplied equipment and materials and contributed to the cost of 60 fellowships to nurses for courses in nursing supervision and education and 550 fellowships for auxiliaries. The Government of Argentina, which provided half the cost of the fellowships in the early years, increased its share to 75 per cent. in 1969.

Preliminary work began in 1961, and in March of that year an orientation seminar, attended by 36 nurses, drew up a guide for the training of professional and auxiliary nursing personnel in Argentina. An evaluation seminar, attended by 43 nurses, was held in April 1963 to revise the guide, which was again revised at a second seminar held in 1968 and attended by 62 nurses. This seminar also prepared a plan of action for the future. The programme, carried out with the co-operation of the national and provincial governments and national universities, was co-ordinated by nurses at the national and local levels. An annual course on nursing supervision, administration and education was given in Buenos Aires; a total of 213 nurses attended. Courses for nursing auxiliaries, in which more than 2500 were trained, were held in Buenos Aires, Córdoba, La Plata, Mendoza, San Juan, Rosario and Tucumán, and later in San Luis, Salta and Jujuy. There are now some 30 courses for auxiliaries in Argentina, most of which follow the basic lines of the programme of training prepared as the result of this project. This programme has been accepted as part of the new regulations for nursing education.

Argentina 6400 Sanitary Engineering Education (1966 - 1975) PAHO

To strengthen the teaching at the Institute of Sanitary Engineering of the University of Buenos Aires.

Argentina 6700 Training of Statistical Personnel (1965 - 1972) PAHO

To strengthen the teaching of health statistics at the School of Public Health of the University of Buenos Aires, which provides courses in health statistics, including two nine-month annual courses for training statistical technicians for medical records and statistical departments and for the general health services.

Barbados 2100 Environmental Sanitation (1970 - 1972) PAHO

To determine the magnitude of the problems in all fields of environmental sanitation, including water supply and sewerage, and take measures for dealing with them in the order of their urgency.

Barbados 2300 *Aedes aegypti* Eradication (1968 - 1971) PAHO

To eradicate *Aedes aegypti*.

This project continues assistance with *Aedes aegypti* eradication previously provided under the inter-country project AMRO 2300.

Barbados 3100 Health Services (1968 -) PAHO

To train staff for implementing the health part of the national development plan.

Barbados 3300 Laboratory Services (1970 -) PAHO

To improve and expand the laboratory services.

Barbados 4200 Nutrition (1969 - 1972) R UNICEF (FAO)

To improve the diet of the people, with emphasis on the increased local production of foods rich in good-quality protein, vitamin B complex, and vitamin A; to improve family education in nutrition; and to train personnel.

Barbados 4801 Hospital Administration (1965 - 1972) UNDP/TA

To organize and operate the Queen Elizabeth Hospital as the central medical care institution of Barbados and as a teaching hospital for the University of the West Indies.

Bolivia 0100 Epidemiology (1968 - 1972) UNDP/TA PAHO

To determine the prevalence and characteristics of the communicable diseases in the country, and to undertake measures for their control.

Bolivia 0200 Malaria Eradication Programme (1957 -) PAHO UNICEF

To eradicate malaria from the country.

Bolivia 0201 Mass Treatment for Malaria Eradication (1970 -) PAHO Special Malaria Fund

To carry out mass drug treatment for radical cure of malaria in the Department of Tarija, where the disease persists (see project AMRO 0220, below).

Bolivia 0300 Smallpox Eradication (1962 - 1972) R

To carry out a programme of combined smallpox and BCG vaccination which started in 1969 and which is aimed at covering 2 170 000 people in five years.

Bolivia 0400 Tuberculosis Control (1963 - 1972) R UNICEF

To organize the available resources for the application of tuberculosis control procedures, with a view to using them better and obtaining a maximum yield from them; and to incorporate tuberculosis control work into the regular work of the local health services.

Bolivia 0901 Typhus (1968 -) PAHO

In preparation for a typhus control programme, to make a serological survey of a representative sample of the rural population in the affected areas and to carry out trial vaccinations in a population group.

Bolivia 2100 Environmental Sanitation (1969 - 1972) PAHO

To improve environmental sanitation programmes. Priority will be given to urban and rural water supply and sewerage programmes, but the project will also cover housing and urbanization and industrial health, as well as education and training. Activities included in various projects assisted by the Organization in Bolivia will be co-ordinated through this project.

Bolivia 2200 Water Supplies

(1960 - 1972) PAHO PAHO Community Water Supply Fund (Inter-American Development Bank)

To extend and improve water supply and sewerage systems.

Bolivia 3100 Health Services

(1955 - 1975) R UNDP/TA PAHO

To improve the national health services at the central and local levels; and to train professional and auxiliary personnel.

Bolivia 3102 Fellowships R: Dental education (two for 10 months), epidemiology (10 months), food control (10 weeks), hospital administration (one for 11 months, one for 23 months), medical education (10 weeks), radiation protection (five months), radiology (12 months), tuberculosis (one month), veterinary medical education (11 months), zoonoses (two weeks).

Bolivia 3104 Health Services, Cochabamba and Tarija (1967 - 1973) UNDP/TA PAHO UNICEF

To develop the health services in the Cochabamba-Tarija area.

Bolivia 3500 Health Statistics (1968 - 1972) UNDP/TA

To reorganize biostatistical services at the national and local levels and train hospital statistical clerks.

Bolivia 4600 Occupational Health (1970 -) UNDP/TA

To implement a national programme aimed at reducing deaths from occupational diseases and accidents, especially in the mining industry.

Bolivia 6200 Medical Education (1968 -) R

To revise the programme of the three medical schools and incorporate concepts of social and preventive medicine into the curricula.

Bolivia 6400 Sanitary Engineering Education (1964 - 1972) PAHO

To improve the technical training of engineering personnel by means of short intensive courses at the University of San Andrés, La Paz, and the Technical University of Oruro.

Bolivia 6600 Dental Education (1963 - 1972) R

To reorganize the curriculum of the schools of dentistry of La Paz, Tarija, and Sucre.

Brazil 0100 Epidemiology (1967 - 1972) PAHO

To improve measures for the control and eradication of communicable diseases.

Brazil 0200 Malaria Eradication Programme (1958 -) PAHO Special Malaria Fund (AID)

To eradicate malaria from the country by a phased programme.

Brazil 0300 Smallpox Eradication

(1956 - 1972) R Special Account for Smallpox Eradication

To intensify the smallpox eradication campaign and organize epidemiological surveillance services.

Brazil 0400 Tuberculosis Control (1966 - 1972) R

To organize a pilot operational research area for carrying out epidemiological studies and to investigate the applicability of tuberculosis control measures, with emphasis on prophylaxis, which can later be extended to other parts of the country.

Brazil 0700 Veterinary Public Health (1969 - 1972) R

To improve food hygiene and deal with problems related to zoonoses, particularly brucellosis and rabies.

Brazil 0701 Rabies Control (1968 - 1972) R

To develop the national and state health services for producing rabies vaccine and carrying out rabies control programmes.

Brazil 0901 Plague Research (1965 - 1972) R

To plan and carry out a research programme that could serve as a basis for a reorientation of the control of plague in the country.

Brazil 0903 Poliomyelitis

(1970 -) Grant to PAHO: American Cyanamid Co.

To control poliomyelitis.

Brazil 1000 Schistosomiasis (1961 - 1973) PAHO

To plan and carry out a pilot programme on schistosomiasis and to expand research work on the disease.

Brazil 1001 Chagas' Disease (1967 - 1972) PAHO

To carry out, in four clinics, a study of 250 or more patients with Chagas' disease, in order to obtain data on the precision and reliability of the diagnosis and on the prognosis regarding the course of the disease.

Brazil 2100 Environmental Sanitation (1952 - 1973) PAHO

To improve the organization of the environmental sanitation services of the Ministry of Health, and to train professional and auxiliary engineering personnel.

Brazil 2101 Air and Water Pollution Control (1963 - 1971) UNDP/TA PAHO

To plan and carry out programmes for the control of air and surface water pollution in the state of São Paulo, particularly in the capital and neighbouring municipalities.

Brazil 2102 Survey of the São Francisco River Basin (1969 -) UNDP/SF (FAO)

In connexion with the project assisted by the United Nations Development Programme, and for which FAO is the executing agency, to investigate the effects of irrigation on the health conditions of the São Francisco River Basin; and assess the incidence of related diseases, particularly schistosomiasis.

Brazil 2200 Water Supplies

(1962 - 1971) R (Inter-American Development Bank)

To draw up plans for water supply systems.

Brazil 2201 Water Supplies, São Paulo (1969 - 1974) PAHO

To strengthen the management of the São Paulo water and sewerage authority.

Brazil 2300 Aedes aegypti Eradication (1967 - 1971) PAHO

To eradicate *Aedes aegypti*.

Brazil 3101 Health Services in States and Territories (1958 - 1973) R PAHO UNICEF

To establish, for the states in the north-east, a general programme into which can be integrated programmes of health, basic sanitation, training of personnel and development of biomedical research, whilst permitting the operation of specific programmes in individual states or institutions.

Brazil 3104 Health Services, São Paulo (1964; 1969 - 1972) R

To improve the health infrastructure by means of a technical and administrative reorganization of the state Ministry of Health, in which emphasis is placed on executive regionalization and decentralization.

Brazil 3105 Fellowships R: Drug control (five weeks), epidemiology (two months), health statistics (two for nine months), hospital administration (six weeks), hospital maintenance (two months), laboratory services (cholera) (one week), medical education (six weeks), nursing education (one for seven weeks, one for 10 weeks), nursing education administration (six weeks), nursing services (10 weeks), paediatrics (three months), plague (seven weeks), public administration (one for three months, five for four months), public health administration (12 months), public health nursing education (10 weeks), public health planning (four months), veterinary public health education (12 months).

Brazil 3108 Health Services in Rural Areas (1969 - 1973) R UNICEF (FAO)

To extend health and nutrition services to the rural population.

Brazil 3110 Health Services, South-eastern States (1968 - 1973) R PAHO

To improve and expand the health services in the states of Paraná, Rio Grande do Sul and Santa Catarina, as part of the process of socio-economic development for which the Superintendency of Development of the Southern Region is responsible.

Brazil 3200 Nursing Services (1953 - 1972) PAHO

To develop basic research in nursing and the education of professional and auxiliary nursing and midwifery personnel, and to improve the organization of nursing services.

Brazil 3302 Yellow Fever Laboratory (1950 - 1972) PAHO

To support the continent-wide campaign against yellow fever by providing laboratory diagnostic services and supplying yellow fever vaccine.

Brazil 3400 Health Education (1968 -) R

To develop well-planned and organized health education services as essential elements of federal and state health programmes; and to improve and extend health education training for all categories of health personnel.

Brazil 3500 Health Statistics (1963 - 1972) R

To improve the vital and health statistics services, especially those related to the notification of communicable diseases; and to train personnel in vital and health statistics and in medical records and hospital statistics.

Brazil 3700 Health Planning (1967 - 1972) PAHO

To formulate national and state plans and to train health personnel.

Brazil 3701 Planning for Health Services, North-eastern States (1958 - 1971) UNDP/TA

To carry out health and basic sanitation programmes in the north-east of Brazil within the global socio-economic development programme for the area, through the Superintendency for the Development of the North-east.

Brazil 4100 Training Centre in Nursing/Midwifery (1967 - 1972) R PAHO

To develop the training centre in nursing/midwifery under the administration of the Ana Neri School of Nursing of the University of Brazil, Rio de Janeiro.

Brazil 4200 Nutrition (1960 - 1972) R UNICEF (FAO)

To improve the nutritional status of the population of the north-eastern part of Brazil through the maximum use of locally available foods, nutrition education and the organization of nutrition courses for professional and auxiliary personnel engaged in health work, education, and agriculture.

Brazil 4201 Nutrition Courses (1963 - 1972) PAHO

To develop nutrition courses for physicians at the Universities of Pará, Minas Gerais, Rio Grande do Sul and Pernambuco.

Brazil 4202 Nutrition, São Paulo (1966 - 1972) PAHO

To prepare, in co-operation with the School of Hygiene and Public Health of the University of São Paulo, nutrition personnel for the health services.

Brazil 4203 Institute of Nutrition, Recife (1964 - 1972) PAHO

To develop the public health nutrition section of the Institute of Nutrition, University of Pernambuco (formerly the University of Recife), to intensify the Institute's research on local food and nutrition problems and to reorganize its training programmes for health personnel.

Brazil 4300 Mental Health (1968 -) PAHO

To make an assessment of mental health problems, and of the services and resources for dealing with them; and to formulate a long-term national mental health programme, whose general aims include medical care and rehabilitation, training, research, and prevention.

Brazil 4602 Toxicology of Pesticides (1968 -) UNDP/SF (FAO)

To expand the pesticide work of the Biological Institute of São Paulo. The Organization helps with the mammalian toxicology aspects of this project, which is assisted by the United Nations Development Programme (Special Fund component), with FAO as the executing agency.

Brazil 4800 Medical Care Services (1966 - 1972) PAHO

To plan and organize medical care services, integrating as far as possible the services provided by the general health programmes, social security agencies and social welfare institutions, and to train personnel.

Brazil 6100 School of Public Health, Rio de Janeiro (1956 - 1971) PAHO

To improve the training given by the School of Public Health, by engaging full-time teaching staff, providing better practice areas and reorganizing the laboratory and library services.

Brazil 6101 School of Public Health, São Paulo (1958 - 1972) R

To strengthen the School of Hygiene and Public Health of the University of São Paulo, with emphasis on its use as an international centre for the training of public health workers.

Brazil 6200 Medical Education (1965 - 1972) R PAHO

To strengthen medical education in the country, particularly as regards the teaching of preventive and social medicine.

Brazil 6202 Paediatric Education, Recife (1963 - 1972) PAHO UNICEF

To improve the teaching of paediatrics in the School of Medicine of the University of Pernambuco (formerly the University of Recife) and provide training in paediatrics, outside the regular medical courses, for professional and auxiliary personnel.

Brazil 6203 Research Training (1965 - 1972) PAHO

To develop a regional training centre for teachers and research workers in microbiology, using the facilities of the Institute of Microbiology in Rio de Janeiro.

Brazil 6204 Teaching of Preventive Medicine (1967 - 1972) PAHO

To organize the teaching of preventive and social medicine and public health at the Faculty of Medicine of the University of Pernambuco, establish programmes of community and family health care and develop investigations into the health problems of the community and their requirements in medical services.

Brazil 6221 and 6222 Library of Medicine (1967 - 1970) PAHO Grants to PAHO: Government of Brazil; United States National Library of Medicine; Commonwealth Fund of New York

To develop the Library of Medicine, established in the Paulista School of Medicine. (See project AMRO 6221 below, under which the activities of this project are being continued.)

Brazil 6302 Training of Nursing Auxiliaries (1963 - 1972) PAHO UNICEF

To increase the number and improve the quality of the training of nursing auxiliaries.

Brazil 6400 Institute of Sanitary Engineering, Rio de Janeiro (1964 - 1971) UNDP/SF

To develop the Institute of Sanitary Engineering, which carries out applied research and field and laboratory work and provides technical advice for the Superintendency of Urban Development and Sanitation of Guanabara State and other agencies, and which is responsible for arranging courses for sanitary engineers in conjunction with the University of Guanabara and for training other professional and auxiliary sanitation personnel.

Brazil 6401 Sanitary Engineering Education (1965 - 1972) PAHO

To organize short postgraduate courses, for engineers, in water supplies, disposal of liquid wastes, hygiene of housing, solid waste disposal, food control, vector control and other environmental sanitation subjects.

Brazil 6500 Veterinary Medicine Education (1960 - 1972) PAHO

To improve the teaching of public health and related subjects in the schools of veterinary medicine.

Brazil 6600 Dental Education (1963 - 1972) PAHO

To develop and improve dental education in the 39 schools of dentistry in the country, and to strengthen the work of departments of preventive and social dentistry and community-oriented research.

Brazil 6700 Biostatistics Education and Population Dynamics (1965 - 1972) R Grant to PAHO: Government of Brazil

To develop research and instruction in the interrelationship between health and population structure and movement, and their association with economic and social processes in Brazil.

British Honduras 0200 Malaria Eradication Programme (1956 - 1974) PAHO UNICEF

To eradicate malaria from the country.

British Honduras 3100 Health Services (1962 - 1973) R UNICEF

To reorganize, expand and improve the general health services, including environmental sanitation services, and to strengthen statistical services.

Canada 3100 Consultants in Specialized Fields (1969 - 1972) R

To obtain short-term consultants, as needed, for specialized problems.

Canada 3101 Fellowships R: Design of health facilities (11 months), nursing education (one for two months, one for nine months).

Chile 0400 Tuberculosis Control (1964 - 1972) PAHO

To develop a tuberculosis programme throughout the country as part of the general health services.

Chile 0600 Venereal Disease Control (1965 - 1973) R

To intensify the programme for the control of venereal diseases in the light of a rising incidence in recent years.

Chile 2100 Environmental Sanitation (1968 - 1973) R

To improve general environmental sanitation conditions and to train professional and auxiliary personnel.

Chile 2200 Water Supplies (1960 - 1972) R

To plan, organize and implement national programmes for the construction or expansion of public water supply and sewerage systems in urban and rural areas, including the extension of the water supply system of the Santiago metropolitan area.

Chile 3100 Health Services (1961 - 1972) UNDP/TA PAHO

To implement the 10-year health plan, improve the organization and administration of the health services, train staff, and carry out research on the epidemiological, social and administrative factors related to health problems and studies of investment for all types of health establishment.

Chile 3101 Fellowships R: Immunology (three weeks), laboratory services (serology) (six weeks), medical education (one for one month, two for five weeks, one for six weeks), medical education (cardiology) (12 months), mental health (one for three months, one for 10 months), neonatology (two for one month), nursing education (four for 12 months), paediatric education (four months), public health nutrition (one for six weeks, one for two months), public health planning (one month), radiation protection (two weeks), rehabilitation (one month), trypano-

somiasis (six weeks), zoonoses (three for two weeks); PAHO: Public health nutrition (10 weeks), public health planning (two weeks).

Chile 3105 Study of Human Resources (1968 - 1971) PAHO

To make a study of health manpower requirements, of health manpower performance in programmes for the expansion of services provided for in the national health plan, and of the relationship between the health manpower needs and the financial situation of the health services in the public sector, with the aim of increasing productivity of the available resources.

Chile 3106 Rural Development (1970 - 1972) PAHO UNICEF (UN) (ILO) (UNESCO)

To improve the health conditions in the central regions of the Provinces of Valdivia and Osorno by stimulating the communities to participate in an integrated health programme as part of the national socio-economic development programme.

Chile 3200 Nursing Services (1960 -) R

To improve the quality of the nursing care given by the health services, and to train professional and auxiliary personnel.

Chile 3300 Laboratory Services (1969 - 1972) R

To promote basic and applied microbiological research, especially in communicable diseases; to train general and specialized microbiologists and health laboratory technicians, organize and improve regional and local health laboratories and provide reference services.

Chile 4100 Maternal and Child Health (1967 - 1972) PAHO

To implement a programme for education and training and for research in maternal and child health problems.

Chile 4103 Clinical and Social Paediatrics Courses (1968 - 1972) R

To improve the preparation of paediatricians through the provision of three-month postgraduate courses in order to prepare them better for dealing with problems that affect the health of children and for improving the administration of child health services.

Chile 4202 Research Training Programme in Nutrition (1970 - 1974) PAHO (Cornell University, USA)

To provide training in research into the effects of nutrition on human growth and development.

Chile 4300 Mental Health (1965 - 1972) PAHO

To develop community mental health techniques in a health district of Santiago, with a view to their subsequent application in the rest of the country, and to conduct epidemiological studies on mental disorders.

Chile 4500 Radiation Protection (1969 - 1974) PAHO

To develop a national programme of protection against the hazards of exposure to radiation and co-ordinate the programme of clinical research in which radioisotope techniques are used.

Chile 4601 Institute of Occupational Health and Air Pollution Research (1961 - 1972) R UNDP/SF

To contribute to the solution of problems of industrial hygiene and occupational health. The Institute trains personnel, carries out research, advises the Government and private organizations on subjects within its competence, and assists in matters relating to labour legislation.

Chile 4800 Medical Care Services (1966 - 1972) PAHO

To plan and organize medical care services, train personnel and carry out research on medical care.

Chile 4802 Cancer (1965 - 1972) PAHO

To extend a programme, begun in Santiago, for detection of cancer of the cervix uteri, and to train staff for the purpose.

Chile 5000 Rehabilitation (1960 - 1972) UNDP/TA

To develop a speech-therapy unit for the rehabilitation of the deaf and mute.

Chile 6100 School of Public Health (1963 - 1973) R

To strengthen the teaching at the School of Public Health in the University of Chile and expand its facilities for the benefit of students from other countries.

Chile 6200 Medical Education

(1962 - 1972) PAHO Grant to PAHO: Kellogg Foundation

To provide courses in medical training methodology at the School of Medicine of the University of Chile, Santiago.

Chile 6201 Training in the Medical Use of Radioisotopes (1962 - 1972) PAHO

To develop the Latin American centre at the Salvador Hospital of the University of Chile, which trains physicians in the medical use of radioisotopes.

Chile 6400 Sanitary Engineering Education (1965 - 1975) R

To strengthen the teaching of sanitary engineering at the School of Physical Sciences and Mathematics and the School of Public Health of the University of Chile, and improve the preparation of professional and auxiliary personnel engaged in environmental sanitation programmes.

Chile 6500 Veterinary Medicine Education (1966 - 1971) PAHO

To improve the teaching programme at the School of Livestock Sciences and Veterinary Medicine of the University of Chile, particularly as regards the preventive medicine and public health aspects.

Chile 6600 Dental Education (1965 - 1972) R Grant to PAHO: Kellogg Foundation

To prepare, organize, and implement a programme for the teaching of preventive and social dentistry at the School of Dentistry of the University of Concepción.

Chile 6700 Population Dynamics (1968 - 1972) PAHO

To support a programme of training and research in the interrelationship of health and population dynamics being carried out at the School of Public Health of the University of Chile.

Colombia 0200 Malaria Eradication Programme (1958 -) PAHO UNICEF

To eradicate malaria from the country.

Colombia 0300 Smallpox Eradication (1967 - 1972) R

To carry out a campaign aimed at vaccinating at least 80 per cent. of the population against smallpox and to organize epidemiological surveillance.

Colombia 0400 Tuberculosis Control (1966 -) R UNICEF

To implement an integrated national tuberculosis control programme beginning with a pilot area in the Girardot health district, which includes 12 municipalities of the Departments of Cundinamarca and Tolima.

Colombia 2100 Environmental Sanitation (1970 - 1975) R

To plan and develop environmental sanitation programmes in urban and rural areas, and train auxiliary personnel.

Colombia 2102 Water Quality Studies

(1969 - 1972) Grant to PAHO: Autonomous Regional Corporation, Colombia

To carry out studies and programmes for the conservation and optimum use of the water resources of the savanna of Bogotá and of the Ubaté and Chiquinquirá valleys.

Colombia 2200 Water Supplies (1960 - 1970) R

The aim was to implement the national water supply programme, which included the planning, design, financing, construction and operation of municipal water supply services. The Organization provided two sanitary engineers from 1962 to 1964 and one from 1964 to 1970, 13 consultants and 12 fellowships.

Advice on technical and managerial matters was provided to the National Municipal Development Institute, which is the agency in charge of the design and construction of water supply and sewerage systems for urban areas. Following management studies, many operational features of the Institute were reorganized. Studies were carried out in certain specific areas, such as water rate structure. In 1969 the Institute was transferred from the Ministry of Public Works to the Ministry of Public Health. A Basic Rural Sanitation Division established in the National Institute for Special Health Programmes was made responsible for all water supply and waste disposal activities in towns with less than 2500 inhabitants.

By 1970, 7 800 000 persons—65 per cent. of the urban population—were served with adequate water supplies piped into the houses. In the rural areas, 4 100 000 people—just under 50 per cent.—had access to drinking-water either through house connexions or nearby public fountains. Between 1960 and 1970 more than \$130 million from national and international sources were invested in water supplies for both urban and rural areas.

Assistance with water supplies will continue under the environmental sanitation project, Colombia 2100.

Colombia 2300 Aedes aegypti Eradication (1951 - 1973) PAHO

To eradicate *Aedes aegypti*.

Colombia 3100 Health Services

(1951 -) R UNDP/TA PAHO UNICEF

To implement the national health plan, the objectives of which are to co-ordinate activities in the health section and assure continuity in health planning, review and revise administrative procedures, strengthen the national system of health statistics, improve the quality and coverage of the health services, control or eradicate communicable diseases, improve environmental conditions in the rural areas, train personnel at all levels, formulate a plan of investments, and stimulate statistical and operational investigations.

Colombia 3103 Special Public Administration Programmes (1967 - 1970) PAHO

The aim was to improve administrative methods and practices through special public health administration programmes. The Organization provided a consultant in 1968, and advisory services by staff members, to assist the National Institute for Special Health Programmes.

The legal structure and functions of the Institute, as an autonomous agency attached to the Ministry of Public Health, were established by executive decree, its statutes and budget were approved, and its organization, internal regulations and

staff were strengthened. Among the Institute's activities were programmes on child welfare, personnel training, hospital architecture, basic rural sanitation and meat inspection, and demographic studies.

Colombia 3301 National Institute of Health (Carlos Finlay)
(1950 -) PAHO

To strengthen the services (research, laboratory diagnosis, and vaccine preparation) which the yellow fever department of the National Institute of Health provides to other countries in connexion with the yellow fever eradication campaign in the Americas.

Colombia 4101 Clinical and Social Paediatrics
(1968 - 1972) R UNICEF

To improve the preparation of paediatricians, through the provision of three-month postgraduate courses, in order to prepare them better for dealing with problems that affect the health of children and for improving the administration of child health services.

Colombia 4200 Nutrition (1960 - 1972) PAHO UNICEF (FAO)

To improve the nutritional status of the population through co-ordinated action of the local health, education, agricultural and community development services; and to train personnel at all levels.

Colombia 4500 Radiation Protection (1967 - 1972) R

To establish a radiation protection service on a national scale in order to cope with the overall problem of radiation exposure, both occupational and of the general public.

Colombia 4900 Health and Population Dynamics
(1968 - 1970) Grant to PAHO: AID

To extend maternal and child health services, including family planning services, to rural areas.

Colombia 6100 School of Public Health (1959 - 1972) R

To develop and improve the organization of the School of Public Health of the University of Antioquia.

Colombia 6200 Health Manpower Studies
(1964 - 1970) Grant to PAHO: Milbank Memorial Fund

The aim was to study health manpower requirements and the means of meeting them, collect data for reorienting medical education and health planning, and develop a working methodology that could serve as a model for other countries. The Organization provided 18 consultants, supplies and equipment, grants for local costs, publication costs, a fellowship and travel and per diem costs to enable co-directors of the studies to observe data-collection methods in the United States of America.

A census of available medical manpower was taken and the data collected were processed and analysed. The findings were presented to the International Conference on Health Manpower and Medical Education, held in Maracay, Venezuela, in 1967, and were later published in English and Spanish. A national morbidity survey was made, consisting of house-to-house interviews with a sample of nearly 53 000 people, and clinical examinations of over 5000 of them. Questionnaires for surveys of physical resources available in government agencies and for a census of dental personnel in the country were prepared and tested, and the census was begun.

Colombia 6201 Medical Education (1965 - 1972) R

To strengthen medical education and provide continuing medical education to practising physicians, especially those in rural areas.

Colombia 6203 Centre for the Teaching of Pathology
(1967 - 1972) PAHO

To establish, through the collaboration of the pathology departments of the National University, the University of Valle, and the University of Antioquia, an international training centre for pathologists; to develop training programmes in pathology for technical and auxiliary personnel; to stimulate postgraduate studies; and to contribute to the establishment of a multinational programme for the academic training of personnel and for studies in Latin America.

Colombia 6204 Experimental Studies of Health Services
(1967 - 1972) Grant to PAHO: AID

To design an operational investigation, based on the results of the study of health manpower and medical education carried out between 1964 and 1967, of the use made of and the training provided for auxiliary personnel in health services.

Colombia 6300 Nursing Education (1968 - 1972) PAHO

To improve the nursing care provided in health services through the establishment of continuing education programmes in administration and supervision, in-service training, and training in specialized fields.

Colombia 6400 Sanitary Engineering Education
(1964 - 1972) PAHO

To improve the training of sanitary engineers; to set up centres for training and applied research in environmental engineering at the National University of Colombia, the University of Los Andes and the University of Valle; and to improve the teaching of sanitary engineering subjects in the regular courses for civil engineers.

Colombia 6500 Veterinary Medicine Education
(1969 - 1972) R PAHO

To improve the teaching of veterinary medicine, particularly as regards the public health and preventive medicine aspects, promote research, and train teaching staff in five universities.

Colombia 6600 Dental and Medical Education
(1961 - 1971) PAHO

To include preventive dentistry in the courses of the School of Dentistry of the University of Antioquia; and to establish a centre for research on dentistry, in which particular attention will be paid to the public health aspects.

Costa Rica 0200 Malaria Eradication Programme (1956 - 1973)
R PAHO Special Malaria Fund UNICEF (AID)

To eradicate malaria from the country.

Costa Rica 2100 Environmental Sanitation (1969 - 1972) PAHO

To plan and carry out programmes for the provision of water and sewerage services in urban and rural areas; to strengthen the sanitary engineering department at the Ministry of Public Health; to plan and develop programmes in industrial hygiene, air and water pollution control, housing and urbanization, solid waste removal, food sanitation, and vector control; to train professional and non-professional personnel; and to develop continuing education and research in sanitary engineering at the University of Costa Rica.

Costa Rica 2200 Water Supplies
(1960 - 1972) PAHO PAHO Community Water Supply Fund (Inter-American Development Bank)

To draw up programmes for providing public water supply and sewerage systems to urban and rural communities; and to establish a national water supply and sewerage service.

Costa Rica 3100 Health Services (1959 - 1972) R PAHO

To prepare and implement a national health plan as part of the national economic and social development plan; to expand and improve the administration of the health services, including the medical care services; to train professional and auxiliary personnel; and to carry out an extensive rural sanitation programme.

Costa Rica 3101 Fellowships R: Environmental sanitation (two for one week), laboratory animal care (three months), maternal and child health (one for one month, one for six weeks), midwifery education (one month), neonatology (two for one month), nursing services (two for one week), paediatrics (two for 12 months), public administration (four months), public health planning (two for four months), radiological health (12 months).

Costa Rica 3300 Laboratory Services (1969 - 1972) PAHO

To develop the Division of Laboratories so that it may serve as the technico-normative and advisory unit of the laboratories of the Ministry of Public Health; to improve the central health laboratory; to regionalize the health laboratory services; and to improve and extend the coverage of local laboratory services.

Costa Rica 4200 Nutrition (1960 - 1972) R

To improve the nutritional level of the population by studying the factors influencing malnutrition, food and nutrition education, and rehabilitation of the undernourished.

Costa Rica 4800 Medical Care Services (1967 - 1970) R

The aim was to improve the returns from investments in medical care facilities and promote an integrated plan for health services to be provided by various institutions. The Organization provided three fellowships, and advisory services by staff members

A study was undertaken to ascertain the magnitude of the hospital problem in the country. The Co-ordinating Committee for Public Health, Welfare and Social Security Activities was set up, with five sub-committees to deal with co-ordination in statistics, national hospital regulations, health services accounting and costs, planning, and construction of establishments. A new hospital with 650 beds was opened by the Costa Rican Social Security Fund and bids were requested for the construction of two more hospitals. Twenty-three nurses, 116 auxiliary nurses, 11 sterilization technicians and seven hospital statistics and medical records officers received training.

Further assistance in the co-ordination of medical care services is planned.

Costa Rica 6300 Advanced Nursing Education (1959 - 1972) PAHO

To establish, at the school of nursing of Costa Rica, programmes to train nurses in teaching and supervision and in specialized fields of nursing.

Costa Rica 6400 Sanitary Engineering Education (1965 - 1972) PAHO

To improve the teaching of sanitary engineering at the University of Costa Rica; and to broaden and update the technical information locally available to engineers working in the field of sanitary engineering.

Costa Rica 6700 Biostatistics Education (1967 - 1972) R

To train medical records librarians for hospitals in Costa Rica and other Latin American countries.

Cuba 0200 Malaria Eradication Programme (1959 -) R

To eradicate malaria from the country and prevent the re-establishment of transmission.

Cuba 0300 Smallpox Eradication (1969 - 1972) R

To equip a laboratory for production of freeze-dried smallpox vaccine in accordance with WHO requirements, in order to assure adequate stocks of locally available vaccine for a nationwide programme for vaccinating a minimum of 80 per cent. of the population.

Cuba 0400 Tuberculosis Control (1969 - 1972) PAHO

To integrate the tuberculosis control programme into the general health services, train personnel for tuberculosis control, and bring diagnostic procedures up to date.

Cuba 0600 Venereal Diseases (1969 - 1972) R

To improve the epidemiological and laboratory aspects of the venereal disease control programme.

Cuba 0700 Zoonoses Control (1969 - 1972) R PAHO

To develop programmes for the eradication of the principal zoonoses, especially brucellosis, tuberculosis, and rabies.

Cuba 2200 Water Supplies (1970 - 1972) R

To strengthen the national water supply programme in urban and rural areas.

Cuba 2300 Aedes aegypti Eradication (1953 - 1973) R PAHO

To intensify the *Aedes aegypti* eradication campaign so that it will cover all infected areas of the country simultaneously, and to incorporate it into the general health services.

Cuba 3100 Health Services (1959 - 1972) R UNDP/TA

To improve the organization of health services at the central, intermediate and local levels, and to set up a demonstration and training area.

Cuba 3101 Fellowships PAHO: Hospital administration (11 months), paediatrics (three months), public administration (one for six weeks, two for four months), public health administration (three months), water supply systems (one week).

Cuba 3300 Laboratory Services (1968 - 1972) PAHO

To expand the facilities for the production of biologicals at the National Institute of Hygiene.

Cuba 4200 Nutrition (1965 - 1972) UNDP/TA PAHO UNICEF (FAO)

To improve the nutritional status of the population.

Cuba 4600 Industrial Hygiene (1969 - 1972) PAHO

To review the occupational health situation in industry and agriculture and the use made of resources available for dealing with occupational health problems; and to make a study of atmospheric conditions and of the installation of air sampling stations in Havana and Matanzas as a basis for the planning of control measures.

Cuba 6200 Medical Education (1965 - 1972) R PAHO

To strengthen medical education, with special reference to the preventive and social aspects of medicine; and to increase the supply of reference material in the medical library.

Cuba 6400 Sanitary Engineering Education (1966 - 1975) R

To strengthen the teaching of sanitary engineering at the University of Havana and improve the preparation of professional and auxiliary personnel engaged in the national environmental sanitation programmes.

Dominican Republic 0200 Malaria Eradication Programme (1957 - 1971) PAHO UNICEF

To eradicate malaria from the country.

Dominican Republic 0400 Tuberculosis Control (1963 - 1971) UNDP/TA

To carry out a study of tuberculosis epidemiology in some pilot areas; to improve on tuberculosis immunization, diagnosis and treatment as presently practised, and to carry out a training programme for professional, technical and auxiliary personnel.

Dominican Republic 2200 Water Supplies (1962 - 1972) PAHO PAHO Community Water Supply Fund (Inter-American Development Bank)

To provide water supply facilities for 62 per cent. of the urban and 25 per cent. of the rural population and sewerage facilities for 14 per cent. of the urban population, and integrate into the National Water Supply and Sewerage Institute 40 per cent. of the systems currently administered by the municipalities, over a period of four years (1969-1972).

Dominican Republic 3100 Health Services (1953 - 1971) R UNDP/TA PAHO Grant to PAHO: Organization of American States UNICEF

To improve the organization of health services at the central, intermediate and local levels and expand the local services in order to provide integrated services to the whole country; and to organize a division of health statistics at the central level.

Dominican Republic 3300 Laboratory Services (1968 - 1971) PAHO

To organize public health and clinical diagnostic laboratory services in hospitals and in five regional laboratories; to establish and standardize procedures; and to train personnel.

Dominican Republic 4200 Nutrition (1965 - 1972) R

To improve the nutritional level of the population. The work covered by the project includes the development of nutrition services, the improvement of hospital food services, the training of personnel and the investigation of new sources of food with high protein value that can be produced locally.

Dominican Republic 6300 Nursing Education (1958 -) R Grant to PAHO: Organization of American States

To strengthen the National School of Nursing by preparing nurses for the faculty, improving physical facilities and areas for field practice, and expanding the curriculum to include public health nursing and courses in teaching and supervision.

Dominican Republic 6400 Sanitary Engineering Education (1969 - 1972) PAHO

To revise and improve the teaching of sanitary engineering subjects in the regular civil engineering courses and organize short intensive courses in selected sanitary engineering subjects for the continuing education of professional and auxiliary sanitary engineering personnel.

Dominican Republic 6600 Dental Education (1965 -) R

To include the preventive and social aspects of dentistry in the curriculum of the School of Dentistry of the University of Santo Domingo.

Ecuador 0100 Communicable Disease Control (1968 - 1972) UNDP/TA PAHO

To develop, through the health services, programmes to ensure the control of communicable diseases.

Ecuador 0200 Malaria Eradication Programme (1956 - 1974) UNDP/TA PAHO Special Malaria Fund UNICEF (AID)

To eradicate malaria from the country.

Ecuador 0300 Smallpox Eradication (1958 - 1965; 1967 - 1972) R

To keep the country free from smallpox by maintaining the necessary level of protection of the population and improving the epidemiological surveillance service.

Ecuador 0400 Tuberculosis Control (1966 - 1969) UNDP/TA PAHO

The aim was to improve the control of tuberculosis. The Organization provided a medical officer for two months, advisory services by staff members and two fellowships.

In 1968 a manual of procedures was prepared, a standard system of forms and basic records procedures and statistical reports was designed, and tuberculosis control work started in all 13 health centres of Manabí Province. In 1969 the tuberculosis control system in use in the hospitals and clinics of the Ecuadorian Tuberculosis League was revised to place greater emphasis on prevention of the disease. From January to October 1969, over 345 000 children under 15 years of age (51.5 per cent. of the target figure) were vaccinated with BCG.

Ecuador 0500 Leprosy Control (1968 - 1972) R

To intensify the leprosy control programme, applying control methods adapted to local conditions, integrate the programme into the general health services, and train staff.

Ecuador 0900 Plague Control (1965 - 1972) R

To develop an effective plague control programme in the endemic areas.

Ecuador 2100 Environmental Sanitation (1968 -) R

To improve environmental sanitation throughout the country by providing specialized advisory services for governmental, provincial, municipal, and university institutions.

Ecuador 2200 Water Supplies (1961 - 1970) PAHO

The aim was to implement the national water supply and sewerage programme and to expand the water systems of Quito and Guayaquil. The Organization provided 17 consultants and supplies and equipment, as well as advisory services by staff members.

Considerable progress was made in the programme of the Institute of Sanitary Works for the construction and expansion of public water supplies in urban areas and in the Ministry of Health's programme for water supplies for rural communities. Management studies were carried out at the Institute of Sanitary Works and the Quito water supply agency, resulting in a re-organization of both. In 1970, a study was made in Guayaquil with the object of setting up an executive office to be in charge of the expansion of the city's sewerage system.

By 1970, 1 344 000 people—60 per cent. of the urban population—were served with water through house connexions and 324 000

people—9 per cent. of the rural population—had house connexions or easy access to public fountains. Nearly \$30 million has been invested in the expansion of existing water systems and the construction of new ones.

Assistance with water supplies will continue under the environmental sanitation project, Ecuador 2100.

Ecuador 3100 Health Services (1953 -) R UNICEF

To develop integrated public health services at the national and local levels, and especially in the Province of Manabí.

Ecuador 3301 National Institute of Health (1952 -) PAHO

To promote the development of various sections of the National Institute of Health.

Ecuador 3700 Health Planning (1969 - 1972) UNDP/TA

To prepare a national health plan.

Ecuador 4200 Nutrition (1970 - 1974) R

To develop applied nutrition work with emphasis on its incorporation in the local health services and on the training of personnel.

Ecuador 4202 and 4204 Endemic Goitre and Mental Retardation (1966 - 1971) PAHO Grant to PAHO: National Association for Retarded Children, USA

To evaluate the effectiveness of iodized oil, injected intramuscularly, in the prevention of endemic goitre in rural areas, with special reference to feasibility and action on growth and development.

Ecuador 4203 Nutrition, Portoviejo (1966-1971) Grant to PAHO: Research Corporation

To establish a nutrition rehabilitation centre in Portoviejo, Province of Manabí.

Ecuador 4500 Health Aspects of Radiation (1969 - 1972) R

To develop a national programme of radiation protection, set up a film badge dosimetry service and promote research.

Ecuador 6200 Medical Education (1968 - 1973) R

To improve the teaching programmes of the medical schools in Quito, Guayaquil and Cuenca and to introduce concepts of social and preventive medicine into the curricula.

Ecuador 6300 Nursing Education (1957 - 1972) R

To strengthen the teaching in the schools of nursing and to expand in-service training for nurses and nursing auxiliaries.

Ecuador 6400 Sanitary Engineering Education (1964 - 1972) PAHO

To improve the quality of training in sanitary engineering in regular engineering courses and to develop short intensive courses in sanitary engineering at the Central University of Ecuador, Quito, and the Universities of Guayaquil and Cuenca.

Ecuador 6600 Dental Education (1967 - 1972) R

To strengthen the curricula of the Schools of Dentistry at the Central University of Ecuador, Quito, and at the University of Guayaquil.

El Salvador 0200 Malaria Eradication Programme (1955 - 1974) R PAHO UNICEF (AID)

To eradicate malaria from the country.

El Salvador 2200 Water Supplies (1961 - 1972) PAHO UNICEF

To prepare short-term and long-term plans for providing the whole country with water supply and sewerage services, design systems and formulate construction plans, expand the water supply and sewerage systems in the capital and other major cities of the country, and train technical and administrative personnel for the services.

El Salvador 3100 Health Services (1963 -) R UNDP/TA PAHO

To plan and carry out integrated health programmes as part of a national health plan.

El Salvador 3101 Fellowships R: Health education (nine weeks), maternal and child health (six weeks), medical records librarianship (three for five months), neonatology (one month), nursing education administration (12 months), nursing services (two for one week, one for 12 months), paediatrics (three months), public administration (four months), public health planning (four months), sanitary engineering (11 months), tuberculosis (one month).

El Salvador 3300 Laboratory Services (1970 -) R

To develop the national laboratory services.

El Salvador 4800 Medical Care Services (1968 - 1972) R

To implement a programme for reconstructing and extending existing hospitals and constructing new ones, organizing an intensive care unit in one hospital and expanding and improving health centres in the interior of the country.

El Salvador 6200 Medical Education (1965 - 1972) PAHO

To strengthen medical education by improving the training of medical faculty members and the pedagogical approach to the teaching of medicine.

El Salvador 6400 Sanitary Engineering Education (1965 - 1975) PAHO

To strengthen the teaching of sanitary engineering at the University of El Salvador and improve the preparation of professional and auxiliary personnel engaged in environmental sanitation programmes.

El Salvador 6600 Dental Education (1966 - 1972) R

To strengthen dental education, particularly as regards the teaching of the social and preventive aspects of dentistry, at the University of El Salvador.

French Antilles and Guiana 0200 Malaria Eradication Programme (1963 -) PAHO

To eradicate malaria from the departments.

French Antilles and Guiana 3101 Fellowships PAHO: *Aedes aegypti* eradication (six weeks).

French Antilles and Guiana 3300 Laboratory Services (1967 - 1972) PAHO

To develop the virus laboratory on the premises of the Pasteur Institute in Cayenne.

French Antilles and Guiana 4800 Medical Care and Rehabilitation (1970) PAHO

The Organization provided a short-term consultant for one week to give technical advice on the rehabilitation of leprosy patients.

Guatemala 0200 Malaria Eradication Programme (1955 - 1973) R PAHO PAHO Special Malaria Fund UNICEF (AID)

To eradicate malaria from the country.

Guatemala 2100 Environmental Sanitation (1969 - 1972) PAHO

To establish and/or improve programmes for the provision of water supplies and sewage disposal in urban and rural areas, control stream pollution, and correct environmental deficiencies in rural housing.

Guatemala 2300 *Aedes aegypti* Eradication (1968 - 1970) PAHO

The aim was to eliminate *Aedes aegypti* from the city of Escuintla and intensify the vigilance system. The Organization provided some supplies and equipment and technical advisory services by staff members.

Guatemala was declared free from *A. aegypti* in 1958 and a vigilance system was established. In 1967, however, the city of Escuintla became reinfested. During 1968 and 1969 a thorough survey of the suspect areas was made and insecticide-spraying was carried out. Periodic check-up of 36 localities, including ports, the international airport, the Pan American Highway, the Inter-Oceania Highway and the railway station, which were particularly vulnerable to reinfestation, did not yield any *A. aegypti* during 1970.

Guatemala 3100 Health Services (1954 - 1972) R UNICEF

To formulate and carry out a national health plan which will include the extension of health services to cover the whole population; and to train professional and auxiliary personnel.

Guatemala 3200 Nursing Services (1968 - 1973)

Grant to PAHO: Kellogg Foundation

To improve nursing care through the establishment of a national nursing policy, the development of continuing education and in-service training programmes, the training of a larger number of nurses, and the improvement of teaching methods.

Guatemala 3300 Laboratory Services

(1964 - 1972) UNDP/TA

To study and evaluate the services provided by the central and local public health laboratories; to plan programmes for the Biological Institute and for all laboratories functioning at other levels; to set up local laboratories where necessary; and to train personnel.

Guatemala 4800 Medical Care Services (1968 - 1972) PAHO

To improve the management of the resources available for medical care; and to co-ordinate activities aimed at health promotion and disease prevention with curative and rehabilitation work.

Guatemala 6200 Medical Education (1966 - 1972) PAHO

To revise the programme of studies and improve teaching methods at the School of Medicine of the University of San Carlos, and to train faculty members.

Guatemala 6400 Sanitary Engineering Education (1967 - 1975) PAHO

To strengthen the teaching of sanitary engineering at the University of San Carlos, and improve the preparation of professional and auxiliary personnel engaged in environmental sanitation programmes.

Guatemala 6500 Veterinary Medicine Education (1962 - 1972) PAHO

To strengthen the School of Veterinary Medicine of the University of San Carlos, especially as regards the teaching of public health and preventive medicine.

Guatemala 6600 Dental Education (1969 - 1972) PAHO

To improve dental education, integrate the teaching of preventive and social dentistry into the curriculum, and promote research.

Guyana 0200 Malaria Eradication Programme (1961 - 1972) PAHO UNICEF

To eradicate malaria from the country.

Guyana 2100 Environmental Sanitation (1969 - 1972) R

To establish a division of sanitary engineering and environmental health in the Ministry of Health, improve school sanitation, rural water supplies and excreta disposal facilities, develop a water supply and management organization and train environmental health personnel.

Guyana 3100 Health Services (1963 -) R UNICEF

To formulate and implement a national health plan, improve the administrative structure of the Ministry of Health and train personnel.

Guyana 3200 Nursing Services (1960 - 1972) UNDP/TA

To develop the nursing services and improve nursing education and administration.

Guyana 4200 Nutrition (1968 - 1972) PAHO UNICEF (FAO)

To organize and develop a national nutrition programme, improve the production, preparation, marketing, and preservation of foodstuffs, and train personnel at the professional and subprofessional levels.

Haiti 0200 Malaria Eradication Programme

(1961 -) PAHO Special Malaria Fund UNICEF (AID)

To eradicate malaria from the country.

Haiti 0600 Yaws Control (1950 -) R

To implement a yaws control campaign, combined with a smallpox vaccination campaign.

Haiti 2200 Water Supplies (1960 -) PAHO

To plan, design and finance an extension of the water supply system of Port-au-Prince and, later, to plan systems for the rest of the country.

Haiti 3100 Health Services (1957 - 1972)

R UNDP/TA PAHO PAHO Special Fund for Health Promotion UNICEF

To develop integrated public health services at the central, intermediate and local levels, to develop the services in a demonstration area set up in the Western Department, and to train personnel.

Haiti 3300 Laboratory Services (1953 -) PAHO

To strengthen and improve the national public health laboratory and the hospital and field laboratories.

Haiti 4200 Nutrition

(1961 - 1971) Grant to PAHO: Research Corporation

To improve nutrition by means of direct aid, education and training, and community development; and to integrate nutrition work into the general health services.

Haiti 6200 Medical Education (1968 -) PAHO

To improve the quality of medical teaching.

Haiti 6300 Nursing Education (1968 - 1972) PAHO UNICEF

To make an assessment of nursing needs and resources; to improve the three schools of nursing and revise their curricula; to develop the newly established National School for Nursing Auxiliaries; and to provide in-service training to nursing auxiliaries, especially in the rural areas.

Honduras 0200 Malaria Eradication Programme (1956 - 1973) R UNICEF (AID)

To eradicate malaria from the country.

Honduras 2200 Water Supplies (1960 - 1972) R PAHO

To plan and carry out national programmes for the construction of water supply systems and for improvement of existing services.

Honduras 2300 Aedes aegypti Eradication (1968 - 1972) R

To eradicate *Aedes aegypti*.

Honduras 3100 Health Services (1955 -) UNDP/TA PAHO

To organize integrated public health services at the central and local levels; to improve environmental health services; and to train professional and auxiliary personnel.

Honduras 3102 Fellowships R: Bacteriology (23 months), food analysis (two for two months), food control (one for six weeks, one for two months), health education (11 months), health statistics (nine months), leprosy (13 months), medical education (two for two weeks), medical records librarianship (two for five months), nursing education (12 months), nursing education administration (12 months), nursing services (two for one week), paediatrics (three months), public administration (two for one month), public health planning (two for four months), sanitary engineering (11 months), zoonoses serology (six weeks).

Honduras 3300 Laboratory Services (1967 - 1972) PAHO

To organize a central public health laboratory in Tegucigalpa, establish regional laboratories, modernize laboratory techniques and train technical personnel.

Honduras 3700 Health Planning (1970 - 1971) PAHO

To formulate a national health plan as part of a socio-economic development plan.

Honduras 4800 Medical Care Services (1965 - 1972) R

To improve the medical care services, including those of the social security institutions.

Honduras 6200 Medical Education (1965 - 1972) R

To organize and develop the Division of Health, grouping all the faculties related to health, of the University of Honduras.

Honduras 6300 Nursing Education (1966 - 1972) PAHO

To strengthen the School of Nursing of the University of Honduras and the School of Nursing of the Vicente D'Antoni Hospital.

Honduras 6400 Sanitary Engineering Education (1965 - 1972) PAHO

To organize short intensive courses for personnel working on water supply and general sanitation programmes; and to carry out research on water supply problems and problems of industrial waste disposal.

Jamaica 2100 Water Supplies and Environmental Sanitation (1968 - 1972) UNDP/TA PAHO

To draw up and implement plans for the extension of environmental sanitation work, including programmes for water supplies in urban and rural areas, and programmes in industrial hygiene, air pollution control and radiation protection; and to train professional and auxiliary personnel.

Jamaica 3100 Health Services (1963 -) R PAHO

To implement the national health services development programme, which provides for an appraisal of the health situation and of resources available for health work, regionalization of the health services, their reorganization and the improvement of administrative practices, extension of population coverage, and training of personnel.

Jamaica 4300 Mental Health (1964 - 1972) UNDP/TA PAHO

To implement a mental health programme, integrated into the general health services, that includes curative and preventive services and training of personnel.

Jamaica 4500 Radiation Protection (1968 - 1972) PAHO

To develop a national radiation protection programme covering both occupational and general exposure to radiation.

Jamaica 4800 Medical Care and Hospital Administration (1967 - 1972) R

To improve medical care and hospital administration.

Jamaica 6100 Public Health Training Centre (1967 - 1972) PAHO

To improve the training of health inspectors and nurses specializing in public health which is provided by the West Indies School of Public Health (formerly the Public Health Training Centre).

Jamaica 6201 Department of Preventive Medicine, University of the West Indies (1963 - 1970) R

The aim was to improve the courses given by the Department of Preventive Medicine of the University of the West Indies and to expand the teaching of medicine in the Caribbean area. The Organization provided two statisticians, nine consultants, a temporary adviser, seven fellowships and a grant.

During the period of the project, training in health statistics was given, in a course for paramedical personnel, to 55 persons from countries and territories of the Caribbean area. Fifteen specialists took the International Classification of Diseases course and 26 the health statistics and medical records course. Nine medical students from universities in the United States of America attended courses in community medicine. The Department of Preventive Medicine gave 10 five-week cycles of training in clerkship, each attended by seven or eight students. The medical statistics course for pre-clinical students was strengthened by increasing the number of lecture hours from 10 to 20; 106 students followed the course. Research studies were carried out in the following subjects: Inter-American Investigation of Mortality in Childhood, epidemiology of leptospirosis, skin infections and their complications, the efficacy of oral poliomyelitis vaccines in a tropical country, complications of measles in Jamaica, and use of live rubella vaccine.

Jamaica 6301 Advanced Nursing Education, University of the West Indies (1965 - 1972) R

To develop the programme of advanced nursing education in the University of the West Indies, strengthen the basic nursing education programme, and organize in-service training for nurses.

Jamaica 6600 Dental Education (1966 - 1972) R UNICEF

To train dental auxiliaries for providing routine dental care to schoolchildren.

Mexico 0200 Malaria Eradication Programme (1956 -) UNDP/TA PAHO PAHO Special Malaria Fund

To eradicate malaria from the country.

Mexico 0400 Tuberculosis Control (1966 - 1972) R UNICEF

To improve the administration of the national tuberculosis control programme, which is based on the integration of all tuberculosis control work into the regular work of the general health services.

Mexico 0700 Zoonoses Control (1970 - 1974) R

To develop national zoonoses control programmes in the veterinary medical services of the Secretariat for Health and Welfare.

Mexico 2200 Water Supplies (1961 - 1972) R PAHO

To provide water supplies to some 70 per cent. of the urban population and 35 per cent. of the rural population, and sewerage systems to over half the urban population.

Mexico 3100 Health Services (1966 - 1972) R UNICEF

To provide for the study of specific problems in specialized fields of health.

Mexico 3102 Fellowships R: Cardiovascular surgery (three months), laboratory services (cholera) (one week), medical records librarianship (two for five months), nutrition teaching (one month), radiation protection (two weeks), vaccine and sera preparation (one for 10 weeks, one for four months).

Mexico 3105 Continuing Medical Education (1968 - 1972) PAHO

To establish a programme of continuing education, particularly for physicians working in rural areas.

Mexico 3300 Laboratory Services (1958 - 1972) PAHO

To plan and organize new public health laboratories and develop the production of biologicals.

Mexico 3301 Training Centre in Immunology (1968 - 1973) PAHO

To provide postgraduate training in immunology and carry out research on immunological problems of local public health importance, particularly as they relate to infectious diseases.

Mexico 3302 Vaccine Production (1968 - 1972) UNDP/TA PAHO

To improve the quality and quantity of poliomyelitis vaccine produced in order to meet the needs of Mexico and provide a source of vaccine for other Latin American countries.

Mexico 3303 National Health Laboratories (1970 - 1975) UNDP/SF

To modernize the national health laboratories.

Mexico 4600 Industrial Hygiene (1966 - 1971) R

To strengthen industrial hygiene and radiation protection programmes.

Mexico 6100 School of Public Health (1954 -) R

To strengthen the School of Public Health of the Secretariat for Health and Welfare in order to train the professional and auxiliary health personnel required to meet the country's needs.

Mexico 6200 Medical Education (1958 - 1972) R

To improve medical education, especially by providing teaching staff with training in the preventive and social aspects of medical practice.

Mexico 6300 Nursing Education (1958 - 1973) PAHO

To improve basic nursing education; and to prepare graduate nurses to serve as instructors, and professional nurses for the training of auxiliary nursing personnel.

Mexico 6400 Sanitary Engineering Education (1961 - 1972) R

To strengthen the teaching of sanitary engineering at post-graduate level at the Schools of Engineering of the Universities of Mexico, Nuevo León and Chihuahua and organize, at these schools, short courses in sanitary engineering subjects for professional personnel in public works and health agencies.

Mexico 6500 Veterinary Medical Education (1969 -) R

To develop the teaching of preventive medicine and public health in the schools of veterinary medicine.

Netherlands Antilles 2300 Aedes aegypti Eradication (1969 - 1972) PAHO

To eradicate *Aedes aegypti*.

Nicaragua 0200 Malaria Eradication Programme (1957 - 1974) R PAHO Special Malaria Fund UNICEF (AID)

To eradicate malaria from the country.

Nicaragua 2200 Water Supplies (1968 -) R PAHO Community Water Supply Fund

To implement a programme for providing potable water to 70 per cent. of the urban population and half the rural population within 10 years.

Nicaragua 3100 Health Services (1963 - 1972) R UNDP/TA UNICEF

To prepare and implement a national health plan for organizing, improving and extending health services, and to train professional and auxiliary staff.

Nicaragua 3101 Fellowships PAHO: Maternal and child health (six weeks).

Nicaragua 4800 Medical Care Services (1968 - 1972) R

To reorganize, extend and improve the hospital system and to train personnel.

Nicaragua 6200 Medical Education (1965 - 1972) R

To strengthen medical education by improving the training of teachers of basic medical sciences and of preventive and social medicine.

Nicaragua 6400 Sanitary Engineering Education (1965 - 1975) PAHO

To strengthen sanitary engineering education and organize intensive short courses in sanitary engineering subjects.

Nicaragua 6600 Dental Education (1966 - 1972) PAHO

To make an analysis of the programmes of professional education in dentistry, particularly as regards preventive and social dentistry, with a view to raising the quality and number of graduates and improving postgraduate studies.

Panama 0200 Malaria Eradication Programme (1956 - 1972) UNDP/TA PAHO Special Malaria Fund UNICEF (AID)

To eradicate malaria from the country.

Panama 2100 Environmental Sanitation (1970 - 1972) PAHO

To plan and execute environmental sanitation programmes, including water supply and sewerage programmes in rural and urban areas, and to train personnel.

Panama 2200 Water Supplies (1960 - 1972) PAHO

To implement a national programme for the construction of water supply and sewerage systems.

Panama 2300 *Aedes aegypti* Eradication (1969 - 1972) PAHO

To eradicate *Aedes aegypti*.

Panama 3100 Health Services (1952 -) R

To prepare and implement a national health plan providing for reorganization, extension and improvement of the health services, and to train the necessary professional and auxiliary personnel.

Panama 3101 Fellowships R: Health statistics (two for nine months, one for 10 months), maternal and child health (12 months), medical records librarianship (five months), mental health (12 months), neonatology (one month), nursing services (two for one week), paediatrics (seven for three months), psychiatric nursing services (10 months), psychiatry (three months), public administration (two for four months), public health administration (11 months), public health nursing (12 months), tuberculosis (one month).

Panama 3300 Laboratory Services (1969 - 1972) R

To improve and expand laboratory services and train personnel.

Panama 4500 Radiation Protection (1970 - 1972) PAHO

To develop radiation protection services in hospitals and other institutions and train personnel for these services.

Panama 4700 Food and Drug Control (1968 - 1972) R

To strengthen the food and drug control section of the Department of Health and the specialized analysis laboratory of the University of Panama, which is serving as a reference laboratory for the countries of Central America; and to train personnel in food and drug control work.

Panama 4800 Medical Care Services (1968 -) PAHO

To expand medical care services, and to integrate health activities so as to achieve a better utilization of the physical resources available.

Panama 6200 Medical Education (1967 -) PAHO

To revise the structure of the University of Panama in order to secure better integration of its faculties concerned with the health professions, and to revise the departmental structure of the faculty of medicine.

Panama 6300 Nursing Education (1968 - 1971) R

To develop the basic nursing degree programme at the University of Panama.

Panama 6400 Sanitary Engineering Education (1965 - 1974) PAHO

To improve the teaching of sanitary engineering at the University of Panama and organize short intensive courses in sanitary engineering subjects.

Panama 6600 Dental Education (1966 - 1972) R

To improve and strengthen the school of dentistry and train faculty members.

Paraguay 0100 Communicable Diseases (1965 - 1972) PAHO UNICEF

To incorporate control of communicable diseases into the work of the general health services.

Paraguay 0200 Malaria Eradication Programme (1957 - 1973) PAHO UNICEF

To eradicate malaria from the country.

Paraguay 0201 Economic Benefits of Malaria Eradication (1968 - 1971) PAHO Special Malaria Fund (AID)

To show quantitatively the effect of malaria in reducing economic productivity in a predominantly agricultural area in process of development, and the economic benefit stemming from eradication of malaria.

Paraguay 0300 Smallpox Eradication (1967 - 1972) R

To carry out maintenance and surveillance operations in order to keep the country free from smallpox.

Paraguay 2100 Environmental Sanitation (1969 - 1972) PAHO

To plan and implement programmes to meet the country's most pressing environmental sanitation needs. Priority is given to water supply and sewerage systems in urban and rural areas, but the project also covers collection and disposal of solid wastes, housing and urbanization, use of insecticides in agriculture, food and milk sanitation, the training of professional and other personnel and continuing education for engineers at universities.

Paraguay 2200 Water Supplies (1961 - 1972) PAHO

To plan and implement a national water supply and sewerage programme.

Paraguay 3100 Health Services (1955 -) UNDP/TA PAHO UNICEF

To develop integrated health services throughout the country, and to train professional and auxiliary health personnel, in accordance with the 10-year health plan which forms part of the national plan for social and economic development.

Paraguay 3101 Fellowships R: Blood banks (five weeks), health statistics (10 months), leprosy (11 months), paediatric education (12 months), public administration (four months), public health administration (10 months), public health nutrition (one for two months, three for nine weeks), public health planning (four months), tuberculosis (three months).

Paraguay 6200 Medical Education (1964 - 1972) PAHO

To strengthen medical education by promoting teaching programmes in preventive and social medicine at the undergraduate and postgraduate (rural internship) levels; and to improve the pedagogical approach to the teaching of medicine.

Paraguay 6400 Sanitary Engineering Education (1967 - 1975) R

To improve the teaching of sanitary engineering at the National University, Asunción.

Paraguay 6600 Dental Education (1966 - 1972) PAHO

To strengthen the teaching at the Dental School of the National University, Asunción, particularly as regards the integration of preventive and social dentistry into basic and clinical courses, and to develop field training programmes for dental students.

Peru 0100 Communicable Diseases (1970 -) R

To improve measures for the control or eradication of communicable diseases and their reporting and to establish epidemiological services.

Peru 0200 Malaria Eradication Programme
(1956 -) PAHO UNICEF

To eradicate malaria from the country by stages.

Peru 0300 Smallpox Eradication (1967 - 1972) R

To implement a programme for maintaining a high level of immunization against smallpox in the population, producing sufficient vaccine for the country's needs and developing an epidemiological surveillance service.

Peru 0700 Veterinary Public Health (1966 - 1974) R

To plan, organize and conduct programmes for the control and prevention of zoonoses, particularly brucellosis, rabies, hydatidosis and bovine tuberculosis.

Peru 0701 Rabies Control (1970 -) R

To plan and implement a rabies control programme.

Peru 0900 Plague Control (1963 - 1972) R PAHO

To plan and carry out an epidemiological study of plague, and to implement a control programme.

Peru 2100 Environmental Sanitation (1968 -) PAHO

To plan and carry out environmental sanitation work including the establishment and improvement of water and sewerage systems, waste disposal, air and water pollution control, housing and urbanization, food sanitation, and training of engineers and auxiliary personnel.

Peru 2200 Water Supplies

(1960 -) R PAHO Community Water Supply Fund (Inter-American Development Bank) (Lima Sanitation Corporation)

To plan and implement a national programme for the construction of new water supply and sewerage services, and the extension of existing systems.

Peru 3100 Health Services

(1956 - 1972) UNDP/TA PAHO UNICEF

To improve health services at the central, regional and local levels; and to organize health areas, beginning with one in the Department of Junin.

Peru 3101 Fellowships R: Immunology (12 months), medical education (microbiology) (six months).

Peru 4200 Nutrition (1965 - 1972) R UNICEF (FAO)

To implement an applied nutrition programme including nutrition education, measures to improve food production and increase the use of locally produced foods of high protein content, and improvement of hospital diet.

Peru 4202 Development of Nutrition Centres in the Central Highlands (1967 -) Grant to PAHO: Research Corporation

To continue the work of the nutrition rehabilitation centres that have been established in the central highlands.

Peru 4500 Radiation Protection (1968 -) R

To develop a national radiation protection programme.

Peru 4800 Medical Care Services

(1970 - 1971) PAHO (Central Air Force Hospital)

To strengthen the administrative and technical systems of the new central air force hospital.

Peru 5000 Rehabilitation (1970 - 1972) UNDP/TA

To reorganize, strengthen the programme and revise the curriculum of the School of Occupational Therapy, which is affiliated with the Peruvian Rehabilitation Institute and the Faculty of Medicine of the University of San Marcos.

Peru 6100 School of Public Health

(1963 - 1972) PAHO UNICEF

To strengthen the School of Public Health, which trains technical, professional and auxiliary personnel for the public health services.

Peru 6200 Medical Education (1964 - 1972) R PAHO

To improve the medical education programmes of the country's medical schools.

Peru 6300 Nursing Education (1959 - 1972) R

To organize and strengthen basic nursing education in the nursing schools of the University of San Marcos and other universities.

Peru 6400 Sanitary Engineering Education (1964 - 1972) PAHO

To strengthen the teaching of sanitary engineering at the National University of Engineering by revising the curriculum, improving the laboratories and library, providing short courses and establishing research projects.

Peru 6500 Veterinary Medicine Education (1965 - 1972) R

To strengthen the School of Veterinary Medicine of the University of San Marcos, especially as regards the teaching of public health and preventive medicine.

Peru 6600 Dental Education (1966 - 1972) PAHO

To revise the curricula of the Schools of Dentistry of Lima and Ica and incorporate into them the teaching of preventive and social dentistry.

Surinam 0200 Malaria Eradication Programme

(1957 - 1973) PAHO Special Malaria Fund UNICEF

To eradicate malaria from the country.

Surinam 2200 Water Supplies (1964 -) UNDP/SF

To plan and design piped water supply and sewerage systems for communities in the Lower Surinam River Basin (excluding Paramaribo) and the heavily populated coastal area, and for selected inland communities.

Surinam 2300 Aedes aegypti Eradication

(1952 - 1972) UNDP/TA PAHO

To eradicate *Aedes aegypti*.

Surinam 3100 Health Services (1965 -) PAHO

To strengthen and integrate the health services and to extend them to rural areas.

Surinam 6200 Medical Education (1968 -) PAHO

To strengthen and improve medical education at the University of Surinam, Paramaribo.

Trinidad and Tobago 0100 Epidemiology (1969 - 1972) R

To organize the newly established division of epidemiology in the Ministry of Health for formulation of programmes for communicable disease control and for effective epidemiological surveillance; and to revise and implement legislation aimed at preventing reinfestation by *Aedes aegypti*, integrate the maintenance phase of the malaria eradication programme into the general health services, protect the susceptible population against the diseases for which effective vaccines are available, and improve systems for the collection and utilization of epidemiological data.

Trinidad and Tobago 2100 Environmental Sanitation (1969 - 1972) PAHO

To strengthen and expand environmental health work.

Trinidad and Tobago 2200 Water Supplies (1963 -) PAHO Community Water Supply Fund

To improve the organization and management of the Central Water and Sewerage Authority and to expand the water supply and sewerage systems.

Trinidad and Tobago 3100 Health Services (1968 - 1972) R PAHO UNICEF

To implement the national health plan.

Trinidad and Tobago 4800 Hospital Administration and Medical Records (1965 -) UNDP/TA

To reorganize the general hospital in Port-of-Spain; to organize medical records departments in the hospitals, clinics and health centres of the Ministry of Health and Housing; and to train personnel in medical record keeping.

Trinidad and Tobago 4900 Health and Population Dynamics (1969 - 1971) Grant to PAHO: AID

To plan and carry out a national family planning programme within the basic health services.

United States 2300 *Aedes aegypti* Eradication (1968 -) PAHO

To eradicate *Aedes aegypti*.

From 1964 to 1967 assistance was provided by the adviser assigned to the inter-country project AMRO 2300.

United States 3100 Consultants in Specialized Fields (1958 -) R

To provide consultant services on specialized problems in public health.

United States 3103 Fellowships R: Dental public health (six weeks), entomology (one month), entomology and parasitology (seven weeks), epidemiology (one month), health education (two months), medical education (geriatrics) (two months), nursing education (one for one month, one for six weeks, one for seven weeks, two for two months), nursing services (one for six weeks, two for two months), nutrition education (six weeks), oncology (two months), paediatrics (two months), public health administration (six weeks), public health education (six weeks), public health planning (two months), rehabilitation (six weeks), sanitary engineering education (one for six weeks, one for seven weeks), veterinary medical education (10 weeks).

Uruguay 0300 Smallpox Eradication (1967 - 1972) R

To carry out a programme of vaccination against smallpox in order to maintain the level of immunity in the population; to organize a programme of epidemiological surveillance; and to

produce smallpox vaccine in sufficient quantity to meet the country's requirements.

Uruguay 1000 Chagas' Disease (1966 -) R

To make a study of Chagas' disease and prepare plans for its control.

Uruguay 2100 Environmental Sanitation (1968 -) UNDP/TA PAHO

To plan and implement environmental sanitation programmes, including the provision of water and sewerage services, sewage treatment, industrial waste disposal, industrial hygiene, water pollution control, housing and urbanization, vector control, food and milk sanitation, and training of personnel.

Uruguay 2200 Water Supplies (1960 - 1971) PAHO Community Water Supply Fund (Inter-American Development Bank) (Organization of American States)

To plan and carry out national water supply programmes.

Uruguay 3100 Health Services (1955 -) R PAHO UNICEF

To organize integrated health services in five departments and later to extend such services to the whole country.

Uruguay 3101 Fellowships R: Hospital administration (two for four months, one for 16 months), intensive care (three months), laboratory services (cholera) (one week), maternal and child care (two for six weeks), midwifery (two months), public administration (six weeks), veterinary medical education (virology) (12 months), zoonoses (one for two weeks, one for 12 months).

Uruguay 3102 Development of the Santa Lucia River Basin (1969 - 1970) R PAHO (Organization of American States)

The aim was to make a study of the water resources of the Santa Lucia River Basin with a view to obtaining the maximum benefit from the use of the water of the basin. The Organization provided consultants in sanitary engineering, public health and systems analysis (a total of 20 months), and a vehicle for field use.

Estimates were prepared of future demands for water for municipal and industrial purposes, of liquid waste loads, and of waste treatment requirements for protection of water quality. An evaluation was made of the effect on health of proposed hydraulic developments, and of the necessary health measures and their cost. A mathematical model for providing optimal solutions for water supply and water quality problems was developed and applied.

The project was the first multilateral project for a comprehensive river basin study in the Region in which the Organization has participated.

Uruguay 3500 Health Statistics (1965 - 1972) R

To improve the collection, processing, tabulation, and publication of statistics of births, deaths, morbidity, resources of health manpower and facilities.

Uruguay 3600 Administrative Methods and Practices in Public Health (1970 - 1971) UNDP/TA

To improve the administration and increase the operational efficiency of the Ministry of Public Health, strengthen the administrative aspects of health planning, and organize courses designed to improve the efficiency of the health services.

Uruguay 4102 Latin American Centre for Perinatology and Human Development (1970 - 1972) R PAHO Grant to PAHO: Ford Foundation

To provide postgraduate training and carry out research on factors that may cause damage to the fetus during pregnancy and parturition.

Uruguay 4300 Mental Health (1965 - 1969) PAHO

The aim was to assess the mental health situation in Uruguay, prepare, as an integral part of the national health plan, a national programme for improving services for mental patients, introduce modern methods of prevention, rehabilitation and research, and train personnel. The Organization provided consultants in 1966 and 1969, a grant for a course in 1969, and advisory services by zone office staff members for the duration of the project.

In 1966 a consultant studied the country's needs and resources in the mental health field and submitted recommendations. In 1969 another consultant assisted the Faculty of Medicine of the University of the Republic with a seminar in alcoholism, and helped to plan services for the prevention of alcoholism and the care and rehabilitation of alcoholics. With the co-operation of the Inter-American Children's Institute a course on early stimulation of children with brain damage, with 52 participants from nine countries, was held in Montevideo between 15 August and 30 September 1969.

Uruguay 4800 Medical Care and Hospital Administration (1966 - 1972) R PAHO UNICEF

To improve the organization and administration of the medical care services of the Ministry of Public Health.

Uruguay 6200 Medical Education (1964 - 1972) PAHO

To strengthen the Faculty of Medicine of the University of the Republic, and to improve the teaching, especially as regards social and preventive medicine and biostatistics.

Uruguay 6400 Sanitary Engineering Education (1965 - 1975) PAHO

To improve the teaching of sanitary engineering at the University of the Republic and implement a programme of continuing education consisting of short courses and seminars.

Uruguay 6600 Dental Education (1970 -) PAHO

To strengthen the system of dental education.

Venezuela 0200 Malaria Eradication (1955 - 1960; 1967 - 1968; 1970 -) PAHO

To eradicate malaria.

Venezuela 2100 Environmental Sanitation (1964 -) PAHO

To plan, implement and evaluate environmental sanitation programmes, including programmes for provision of water supplies, collection and disposal of solid wastes and refuse and garbage, insect and rodent control, air pollution control, food sanitation, and sanitation of schools and public places.

Venezuela 2200 Water Supplies

(1960 - 1973) PAHO PAHO Community Water Supply Fund (National Institute of Sanitary Works)

To improve the organizational structure and the administrative and managerial policies and practices of the National Institute of Sanitary Works.

Venezuela 2300 Aedes aegypti Eradication (1958 -) PAHO

To eradicate *Aedes aegypti*.

Venezuela 3100 Health Services (1964 -) R

To strengthen the organization of the Ministry of Health and Welfare and develop the national health planning process.

Venezuela 3300 Laboratory Services (1966 - 1972) UNDP/TA

To strengthen and extend the network of public health laboratories and to integrate them into the public health services.

Venezuela 3301 National Institute of Hygiene (1964 - 1972) PAHO

To strengthen the organization and programmes of the National Institute of Hygiene.

Venezuela 4200 Nutrition (1965 - 1972) R PAHO

To develop a nutrition programme as an integral part of the health services. (See page 137.)

Venezuela 4300 Mental Health (1954 - 1971) UNDP/TA

To assess mental health problems and to plan a national mental health programme, integrated into the national health plan, and providing for care and rehabilitation of patients, training of personnel, research, and prevention of mental disorders.

Venezuela 4400 Dental Manpower Studies (1969 - 1971) PAHO

To design and develop a detailed study on the present and future needs of the population for dental services.

Venezuela 4401 Centre for Dental Materials (1969 - 1974) R PAHO Grant to PAHO: Kellogg Foundation

To develop training and research, and the quality control and standardization of dental materials, at the Centre for Dental Materials established in the School of Dentistry of the Central University, Caracas, in 1969.

Venezuela 4500 Radiation Protection (1970 - 1972) R

To reduce and control exposure to radiation from medical X-rays and from radium and radioisotopes used in medicine, industry, and research.

Venezuela 4800 Medical Care Services (1966 - 1972) R PAHO

To prepare and implement plans for developing the medical care services and train professional and auxiliary personnel.

Venezuela 4802 Hospital Maintenance and Engineering Centre (1968 - 1971) UNDP/SF

To establish a centre for hospital maintenance and engineering, directly under the Ministry of Health and Welfare and responsible for the organization and implementation of maintenance services in the various medical care institutions.

Venezuela 5000 Rehabilitation (1963 - 1972) R

To develop the courses in physical therapy and occupational therapy at the School of Public Health, Caracas, organize departments of occupational therapy and regional rehabilitation services, introduce occupational therapy into mental health services and plan and organize a model shop for the production of prosthetic and orthopaedic appliances.

Venezuela 6100 School of Public Health (1961 - 1972) R

To broaden the scope of the School of Public Health of the Central University, Caracas, and improve the teaching.

Venezuela 6200 Medical Education

(1958 - 1972) PAHO Grant to PAHO: Milbank Memorial Fund

To improve medical education in Venezuela, in particular as regards preventive medicine and the teaching of basic medical sciences.

Venezuela 6300 Nursing Education (1959 - 1972) PAHO

To improve nursing education.

Venezuela 6400 Sanitary Engineering Education

(1964 -) UNDP/SF Funds-in-trust

To strengthen the teaching of sanitary engineering in the civil engineering curricula in four universities; to develop postgraduate courses at the Central University of Venezuela; to establish an experimental station and laboratories for research and practical training; and to provide continuing education in sanitary engineering.

Venezuela 6500 Veterinary Medicine Education (1966 - 1972) R

To strengthen the teaching of basic veterinary sciences, and of the preventive aspects of veterinary medicine, in three universities.

Venezuela 6600 Dental Education (1966 - 1972) R

To develop and improve dental education at university level, especially in preventive and social dentistry, and to train auxiliary dental personnel.

West Indies 0500 Leprosy Control (1970 -) R

To study the magnitude of the leprosy problem and its characteristics in St Lucia and implement control measures.

West Indies 0701 Rabies Control, Grenada (1968 - 1971) R

To improve the control of rabies in Grenada in order to reduce the incidence of the disease and eliminate the hazard to the human and animal populations.

West Indies 2101 Environmental Sanitation, Montserrat

(1970 -) UNDP/TA

To train sanitation staff.

West Indies 2200 Water Supplies (1962 - 1972) UNDP/TA

To plan water supply systems for several islands in the Caribbean.

West Indies 2300 Aedes aegypti Eradication

(1969 - 1972) PAHO

To eradicate *Aedes aegypti* from Antigua, the British Virgin Islands, Dominica, Grenada, Montserrat, St Kitts, St Lucia and St Vincent.

West Indies 3100 Health Services (1969 -) R UNICEF

To formulate and implement health programmes as part of plans for socio-economic development in the islands of the Eastern Caribbean.

West Indies 3108 Health Services, Grenada

(1969 - 1972) R UNICEF

To strengthen the health services and train staff.

West Indies 3300 Laboratory Services (1968 - 1972) PAHO

To improve the health laboratory services in the islands of the Eastern Caribbean.

West Indies 3500 Health Statistics (1970 -) PAHO

To establish, in each ministry of health of the Eastern Caribbean, a health statistics unit capable of providing the administration with comprehensive and accurate data for continuous planning and evaluation of the health services.

West Indies 4200 Nutrition (1962 -) R UNICEF (FAO)

To improve the level of nutrition of the population of the islands of the Caribbean through courses in nutrition for technical personnel and nutrition education in schools and health centres.

West Indies 4300 Mental Health (1969 - 1972) PAHO

To plan and develop mental health services.

West Indies 4701 Food and Drug Legislation, Bahamas

(1970 -) PAHO

To modernize the food and drug control laws.

West Indies 4800 Medical Care and Hospital Administration (1969 -) UNDP/TA

To improve hospital efficiency by training personnel in hospital maintenance and engineering, and in food, central supply, house-keeping and laundry services.

West Indies 6300 Nursing Education (1970 - 1975) PAHO

To improve the quality of clinical teaching and supervision of both professional and auxiliary nursing students.

AMRO 0102 Epidemiology, Zone II (1965 -) PAHO**AMRO 0103 Epidemiology, Zone III (1961 -) PAHO****AMRO 0104 Epidemiology, Zone IV (1966 -) PAHO****AMRO 0106 Epidemiology, Zone VI (1958 -) PAHO**

To stimulate the development and co-ordination of programmes for the eradication or control of communicable diseases in the countries of the zone; to advise the governments on new methods and techniques of control and on problems related to the application of the International Sanitary Regulations; and to promote better reporting of notifiable diseases.

AMRO 0200 Malaria Technical Advisory Services, Inter-zone (1955 -) R PAHO PAHO Special Malaria Fund

To provide technical advisory services and local training in certain aspects of country programmes for which long-term appointments of advisers are not necessary.

AMRO 0201 Malaria Technical Advisory Services, Zone I (1969 -) PAHO**AMRO 0203 Malaria Technical Advisory Services, Zone III (1958 -) PAHO PAHO Special Malaria Fund**

To assist with the malaria eradication programmes in the countries of the zone.

AMRO 0216 Research on the Epidemiology of Malaria Eradication in Problem Areas (1966 - 1972) PAHO Special Malaria Fund

To carry out epidemiological studies for determining the factors responsible for continued transmission of malaria in areas in the attack phase of eradication programmes and to investigate the epidemiological and entomological effects of proposed attack measures in order to evaluate their potential for solving the problems in the way of achieving eradication.

AMRO 0218 Rural Health Services and Malaria Eradication Campaigns (1967 -) PAHO

To encourage greater participation by the general health services in surveillance and other activities of the malaria eradication services and to assist the general health services in providing the coverage in rural areas that will enable them to assume responsibility for maintaining freedom from malaria when eradication has been achieved.

AMRO 0219 Data Processing and Operations Research in Malaria Eradication (1968 - 1970) PAHO

The aim was to investigate whether modern high-speed data processing methods were suitable for routine and/or selective use in malaria eradication. The Organization provided a statistician, advisory services by staff of the inter-zone malaria technical advisory services project AMRO 0200 and supplies and equipment.

Preliminary work began in April 1967 in Rio de Janeiro, Brazil. A plan of action was outlined and in 1968 personnel were trained and computer programmes were designed. In 1969, 27 computer programmes covering epidemiological evaluation and payroll were processed and tested in the Rio de Janeiro, Paraná and Santa Catarina sectors of the malaria eradication programme with satisfactory results. Following an analysis of the cost/benefit aspects of the project, made by the Brazilian Government and the Organization in June 1969, it was decided that the high cost of the automated processing of the data was not at the time justified and the project was discontinued.

AMRO 0220 Field Research in Malaria Eradication (1969 - 1970) PAHO Special Malaria Fund

The Organization provided equipment and supplies, including antimalarial drugs, funds for payment of local personnel, and advisory services of project staff in support of a field trial of mass treatment with antimalarial drugs in Bolivia. The purpose of the trial was to ascertain whether radical cure of *Plasmodium vivax* infection can be obtained by a combination of chloroquine, pyrimethamine and primaquine administered on three consecutive days. The area selected for the trial was the Pilcomayo River Valley, in the Department of Tarija, which covers some 24 670 square kilometres, contains 240 localities and has about 15 000 inhabitants.

The trial is continuing, assistance being provided by the Organization under project Bolivia 0201.

AMRO 0300 Smallpox Eradication, Inter-zone (1951 -) R PAHO

To assist countries of the Region in planning, implementing and co-ordinating their smallpox eradication programmes.

AMRO 0304 Smallpox Eradication, Zone IV (1968 -) R

AMRO 0306 Smallpox Eradication, Zone VI (1967 -) R

To assist the countries of the zone with their smallpox eradication programmes.

AMRO 0400 Tuberculosis Control, Inter-zone (1957 -) R PAHO

To assist countries of the Region in planning, implementing and assessing their tuberculosis programmes and in improving the collection and use of epidemiological data.

AMRO 0402 Tuberculosis Control, Zone II (1969 -) R

AMRO 0403 Tuberculosis Control, Zone III (1963 -) PAHO

AMRO 0404 Tuberculosis Control, Zone IV (1962 -) R

To assist the countries of the zone with their tuberculosis control projects.

AMRO 0409 Courses on the Epidemiology of Tuberculosis (1969 - 1972) PAHO

To co-operate in providing an annual three-month course for training personnel from Latin American countries in the basic principles and methods used in the formulation, organization and evaluation of tuberculosis control programmes and in techniques of prevention, diagnosis and treatment of tuberculosis.

AMRO 0410 Courses on the Bacteriology of Tuberculosis (1969 - 1972) R

To co-operate in providing an annual four-week course for training personnel from Latin American countries in the bacteriology of tuberculosis, with particular reference to the development of epidemiological information, case-finding, treatment control and evaluation of programmes.

AMRO 0500 Leprosy Control, Inter-zone (1958 -) PAHO

To determine the prevalence and characteristics of leprosy in the Americas; and to assist governments in planning and implementing leprosy control programmes and in training professional and auxiliary personnel.

AMRO 0504 Leprosy Control, Zone IV (1960; 1962 - 1969) R

The aims were to study the leprosy problem in countries of the zone, assist in the organization, implementation and evaluation of control programmes and train professional and auxiliary personnel. The Organization provided a leprologist from 1963 to 1969 and three fellowships.

The national authorities of Bolivia, Colombia, Ecuador and Peru were assisted in the investigation of the leprosy problem, the design of control programmes, the improvement of administrative and statistical systems, the evaluation of results, and the training of personnel. Studies were made of the frequency of disabilities caused by leprosy, and personnel were trained in the use of non-surgical rehabilitation techniques. All countries of the zone took part in the seminar on administrative methods for leprosy control programmes, held in Guadalajara, Mexico, in 1968. In 1969 the Bolivian authorities were assisted with a training course on leprosy for professional and auxiliary personnel, held in Monteagudo, Chuquisaca. In Colombia the leprosy control programme and the central registry of leprosy cases were reorganized. In Ecuador work continued on the evaluation of the national programme, and in Peru the leprosy survey in the Ucayali region was completed.

AMRO 0600 Venereal Disease Control, Inter-zone (1961 -) PAHO

To assist the countries of the Region in venereal disease control and in training staff.

AMRO 0700 Pan American Zoonoses Centre, Argentina (1956 -) R PAHO PAHO Special Zoonoses Fund Grants to PAHO: Government of Argentina and other entities

To advise countries of the Region on the establishment and improvement of veterinary public health services and zoonoses

control programmes; to carry out research on the most prevalent zoonoses; and to train technical personnel for zoonoses control work.

AMRO 0702 Veterinary Public Health, Zone II
(1968 -) PAHO

AMRO 0703 Veterinary Public Health, Zone III
(1957 -) R

AMRO 0704 Veterinary Public Health, Zone IV
(1968 -) R

To assist the countries of the zone in developing veterinary public health services and activities, especially the study and control of zoonoses and the application of protective measures in food control; to promote the teaching of veterinary public health; and to collaborate in the evaluation of veterinary public health and related programmes.

AMRO 0710 Rabies Control, Mexico/United States Border
(1966 -) Grant to PAHO: US Public Health Service

To assist the Governments of Mexico and the United States of America in eliminating rabies in dogs and other animals along the border between the two countries.

AMRO 0713 Seminar on Animal Tuberculosis, Santiago, Chile
(21 - 25 Sept. 1970) R

The seminar was organized, in collaboration with the Chilean Ministries of Health and Agriculture, for the purpose of reviewing the position regarding bovine tuberculosis in the countries of the Region. Participants included the animal health officers of the ministries of agriculture of the countries of the Region. The seminar reviewed the pathogenesis, pathology and epidemiology of bovine tuberculosis, control and eradication programmes, production and quality control of tuberculin, and problems encountered in the various countries.

The Organization provided six consultants, advisory services of staff members, including staff of the Pan American Zoonoses Centre, and met the cost of attendance of the participants.

AMRO 0800 Pan American Foot-and-Mouth Disease Centre, Rio de Janeiro (1951 -) PAHO Grant to PAHO: Government of Argentina (Inter-American Development Bank)

To assist the countries of the Americas in the control and prevention of foot-and-mouth disease and other vesicular diseases, the conduct of research related to the preparation and testing of vaccines, and the training of personnel.

AMRO 1000 Parasitic Diseases (1966 -) PAHO

To assist countries with the planning and execution of research and control programmes related to parasitic infections, the establishment of priorities and the development of better control procedures.

AMRO 1007 Schistosomiasis (1960 -) PAHO

To foster the development of national programmes of schistosomiasis control and research.

AMRO 1008 Chagas' Disease
(1960 - 1972) PAHO Grant to PAHO: Wellcome Trust

To determine the epidemiological characteristics of Chagas' disease, its prevalence and its severity, provide support for national control programmes and encourage related research and training activities.

AMRO 2100 Environmental Sanitation, Inter-zone
(1958 -) PAHO

To assist countries with various environmental sanitation activities, including collection and disposal of solid wastes, food sanitation, school sanitation, sanitation of public establishments and transport, vector control (including rodent control) and training of auxiliary personnel.

AMRO 2101 Sanitary Engineering, Zone I
(1960 -) PAHO

AMRO 2102 Sanitary Engineering, Zone II
(1960 -) R

AMRO 2103 Sanitary Engineering, Zone III
(1960 -) PAHO

AMRO 2104 Sanitary Engineering, Zone IV
(1960 -) PAHO

AMRO 2106 Sanitary Engineering, Zone VI
(1960 -) PAHO

To assist the governments of countries in the zone in improving the organization of the environmental sanitation services of the ministry of health; to advise the agencies responsible for water supply and sewerage services; and to co-operate with universities and other institutions in training professional and auxiliary personnel for sanitation work.

AMRO 2107 Environmental Sanitation, Caribbean Area
(1956 -) UNDP/TA

To investigate and evaluate environmental conditions and provide technical advice during the development of extensive sanitation programmes in the countries and territories of the Caribbean area.

AMRO 2108 Seminars on Sanitary Engineering, Zone III
(1967 - 1971) PAHO (Inter-American Association of Sanitary Engineering)

In co-operation with the Inter-American Association of Sanitary Engineering, to organize seminars for officials responsible for environmental sanitation programmes in the countries of the zone, to enable them to study and analyse pressing problems related to water supply, sewage disposal, water pollution, and other environmental sanitation matters.

AMRO 2114 Pan American Sanitary Engineering Centre
(1968 -) R Special Account for Servicing Costs PAHO

To develop the Pan American Sanitary Engineering and Environmental Science Centre that has been set up to provide countries of the Region with services to assist them in solving the health problems caused by too-rapid urbanization. The work of the Centre includes the collection and dissemination of information on new developments and methods, the planning and conduct of seminars on urban environmental problems, and the stimulation of training and research.

AMRO 2200 Water Supplies, Inter-zone (1959 -) R PAHO

To advise countries of the Region on the planning, financing and carrying out of national water supply programmes and on the organization and administration of central and local water supply and sewerage authorities.

AMRO 2203 Water Supplies, Zone III
(1964 -) PAHO

To assist the countries of the zone in their water supply and sewage disposal problems.

AMRO 2213 Studies and Investigations of Water Resources
(1964 -) UNDP/TA

To collaborate with the Economic Commission for Latin America (ECLA) in a study of Latin America's water resources, particularly with a view to the provision of adequate water supplies.

AMRO 2214 Symposium on Water Pollution Control, Caracas
(16 - 21 Aug. 1970) PAHO

The purpose of the symposium was the study and evaluation of the situation as regards water pollution in Latin America and the Caribbean area and of policies that should guide the formulation of national programmes of water pollution control. There were 131 participants from 25 countries. Recommendations were made concerning steps that might be taken by governments, international financing institutions and the Organization.

The Organization provided six consultants and the services of specialized staff members, and met the cost of attendance of 30 participants.

AMRO 2219 Water Meters

(1969 -) Grant to PAHO: Inter-American Development Bank

To study various kinds of water meters under variable conditions and analyse the results; to publish a reference manual containing technical information, specifications, and uses of various types of meters; and to provide advice and training on the subject.

AMRO 2220 Public Services Administration

(1970 - 1975) R PAHO PAHO Community Water Supply Fund

To assist the institutions in Latin America concerned with water supply services to improve their operation and administration.

AMRO 2300 *Aedes aegypti* Eradication, Inter-zone
(1954 -) PAHO

To stimulate, co-ordinate and evaluate *Aedes aegypti* eradication programmes in countries and territories of the Region.

AMRO 2301 *Aedes aegypti* Eradication, Caribbean Area
(1950 -) UNDP/TA

AMRO 2303 *Aedes aegypti* Eradication, Zone III
(1966 -) PAHO

To assist with *Aedes aegypti* eradication campaigns and with the organization of vigilance services.

AMRO 2308 Advisory Committee on Dengue Fever,
Washington, D.C. (15 - 16 Jan. 1970) PAHO

The Committee was convened to consider methods of improving the surveillance of dengue fever in the Americas, on account of the increase in frequency and intensity of outbreaks of the disease in the Caribbean area and in certain parts of the north of South America. The committee proposed the establishment of a programme that could permit epidemics of dengue to be discovered in their early stages, assure immediate detection of the dengue shock/haemorrhagic fever syndrome, regularly monitor and evaluate the magnitude of the problem of the disease from the public health and economic points of view, and provide knowledge on the natural history of dengue viruses.

The Organization met the cost of attendance of the 11 participants and provided the services of staff members.

AMRO 2309 Study Group on *Aedes aegypti*-borne Disease Eradication Washington, D.C. (9 - 14 Feb. 1970) PAHO

The study group was convened, in accordance with a resolution of the XIX Meeting of the PAHO Directing Council/ twenty-first session of the Regional Committee for the Americas, to review the strategy and methods for the prevention of diseases transmitted by *Aedes aegypti* in the Americas, and to define, as necessary, the objectives of and guidelines for a study of all possible alternative systems and of their consequences. There were 15 members—experts in epidemiology, environmental sanitation, virology, public health administration, entomology and anthropology.

The Organization met the cost of attendance of the members and the meeting costs.

AMRO 2400 Public Health Aspects of Housing and Urbanization (1962 -) PAHO

To foster the participation of health authorities in housing and city planning programmes; and to advise countries of the Region on the establishment of health standards for houses and urban areas.

AMRO 3107 Public Health Administration, Caribbean Area
(1963 -) R PAHO

To assist the governments in the Caribbean area in formulating and implementing health programmes within their plans for social and economic development and to promote co-ordination of programmes and the sharing of specialized services.

AMRO 3110 Co-ordination of International Research
(1962 -) PAHO

To stimulate the development of biomedical research and training of specialized personnel; and to provide for an annual meeting of the PAHO Advisory Committee on Medical Research to analyse and make recommendations on suggested projects and on those in operation.

AMRO 3122 Development of the Río Plata Basin
(1967 - 1972) PAHO

To assist with the health aspects of the project under which the United Nations, through the Economic Commission for Latin America and in association with the Inter-American Development Bank, is helping the Governments of Argentina, Bolivia, Brazil, Paraguay and Uruguay in making a critical inventory of the basic information needed for integrated development of the Río Plata Basin.

AMRO 3125 Special Seminars in Zone III (1970 - 1973) PAHO

To assist the countries of the zone in the organization of inter-country seminars on such subjects as malaria, food and drugs, laboratory services, health statistics, tuberculosis and health education prior to the annual meeting of the Central American Ministers of Health, whose decisions are based on the recommendations made in these seminars.

AMRO 3126 Operations Research (1970 -) PAHO

To promote the application of the concepts and methodology of operations research to the solution of health problems in order to derive maximum returns from investment.

AMRO 3129 Research Training in Biomedical Sciences
(1969 - 1972) Grant to PAHO: Wellcome Trust

To provide research training in the biomedical sciences, within the Region, for workers from countries of the Caribbean area, Middle America and South America.

AMRO 3130 International Symposium on Mycoses, Washington, D.C. (24 - 26 Feb. 1970) Grants to PAHO: United States Army; Squibb Institute for Medical Research; Cyanamid International

The symposium was attended by over 60 investigators from Argentina, Colombia, Costa Rica, France, Guatemala, Mexico, United States of America, Uruguay, Venezuela and Yugoslavia. They considered the mycoses as a public health problem, recent advances in diagnostic procedures, therapy, ecology and epidemiology, training, and future needs in medical mycology. Recommendations were formulated concerning the establishment of a permanent co-ordinating committee for the mycoses, to serve as an advisory body to the Organization, with sub-committees on training, regional diagnostic centres and diagnostic procedures.

The Organization met the cost of attendance of 32 participants and meeting costs, and provided the services of staff members.

AMRO 3131 Caribbean Health Ministers Conference (1970 - 1972) PAHO

To assist the countries of the Caribbean area in the establishment of a secretariat for conferences of the Ministers of Health.

AMRO 3200 Nursing Services, Inter-zone (1968 -) PAHO

To assist countries in the development of short-term and long-term plans to meet the nursing needs of their health services; and to strengthen the administration and organization of nursing services.

AMRO 3201 Nursing, Zone I (1959 -) PAHO

AMRO 3202 Nursing, Zone II (1962 -) PAHO

AMRO 3203 Nursing, Zone III (1963 -) PAHO

AMRO 3204 Nursing, Zone IV (1952 -) PAHO

AMRO 3206 Nursing, Zone VI (1963 -) PAHO

To assist countries of the zone in planning and organizing nursing services, in developing educational programmes for professional and auxiliary nursing and midwifery personnel, and in promoting research in nursing.

AMRO 3210 Hospital Nursing Services (1966 -) PAHO

To organize a series of educational conferences on the organization of nursing services and to stimulate the development of continuing education programmes for nurses and of courses in nursing service administration.

AMRO 3211 Seminars on Planning for Nursing (1969 - 1972) R

To assist countries in the development of nursing systems in accordance with their level of socio-economic development and their nursing needs as expressed in their national health plans.

AMRO 3300 Laboratory Services, Inter-zone (1955 -) R

To assist countries of the Region in improving health laboratory services and in the production and control of biological products.

AMRO 3301 Laboratory Services, Caribbean Area (1965 - 1970) PAHO UNICEF

The aim was to develop, at the University of the West Indies, Kingston, Jamaica, a programme for training laboratory technicians for the English-speaking countries and territories in the Caribbean area with the ultimate objective of improving the clinical and public health laboratory services in the area. In addition to advisory services by staff members, the Organization provided consultants (one in 1965 and 1966 and two in

1967 and 1970), laboratory materials and—under other projects—eight to ten fellowships a year for training laboratory technicians at the University.

Following a survey to assess problems and resources, made in 1965, training courses for laboratory technicians were begun. The programmes and facilities of the University have been developed; in 1970 the microbiology department and the animal-colony facilities were reorganized. The University has prepared technical manuals in haematology, clinical pathology, histology, microbiology, enteric bacteriology and blood-banking which are in use in the Caribbean countries.

AMRO 3303 Laboratory Services, Zone III (1965 -) PAHO

To assist in improving public health laboratories in the countries of the zone. The long-term aim of the project is to establish, in each country, a network of laboratories to provide extended services in rural areas.

AMRO 3311 Training of Laboratory Personnel (1968 -) PAHO

To improve the training of laboratory personnel by providing short intensive courses on specific subjects.

AMRO 3314 Trinidad Regional Virus Laboratory (1969 - 1972) R (University of the West Indies)

To assist in continuing and developing the diagnostic and virus disease surveillance work of the Trinidad Regional Virus Laboratory.

AMRO 3315 Immunology Research and Training Centre (1969 - 1972) R

To provide postgraduate training in basic immunology for candidates from Latin American countries, and develop immunological research projects related to public health problems in those countries.

AMRO 3400 Health Education, Inter-zone (1968 -) R

To assist governments in developing health education services and in training health personnel in health education and related disciplines.

AMRO 3401 Health Education, Caribbean Area (1963 - 1972) UNDP/TA

To help the countries and territories of the area in developing health education work and training personnel.

AMRO 3407 Regional Centre for Functional Literacy in Rural Areas of Latin America (1951 - 1953; 1960 -) R (FAO) (ILO) (UNESCO) (Organization of American States)

To co-operate in the training of students at the Regional Centre for Functional Literacy in Mexico.

AMRO 3501 Health Statistics, Zone I (1964 -) PAHO

AMRO 3502 Health Statistics, Zone II (1958 -) R

AMRO 3503 Health Statistics, Zone III (1955 -) R PAHO

AMRO 3504 Health Statistics, Zone IV (1956 -) R

AMRO 3506 Health Statistics, Zone VI (1959 -) PAHO

To assist the countries of the zone in improving their vital and health statistics systems; and to advise them on the use of statistical data in national health planning and on the statistical aspects of projects.

AMRO 3513 Inter-American Investigation of Mortality in Childhood (1966 - 1972) PAHO Grant to PAHO: AID

To study child mortality in selected urban and rural areas of Latin America and of the United States of America, in order to obtain accurate and comparable data on death rates in relation to nutritional, sociological, and environmental factors which may be responsible for excessive mortality.

AMRO 3516 Regional Advisory Committee on Computers in Health, Buenos Aires (13 - 17 April 1970) R

The Regional Advisory Committee on Computers in Health, composed of representatives of eight Member governments and three expert advisers, made a review of the current situation and future prospects regarding the uses of computers for purposes connected with health in the Region. The Committee's report, which contains a number of recommendations, is being published as PAHO Scientific Publication No. 211.

The Organization met the cost of attendance of the participants and the meeting costs.

AMRO 3600 Administrative Methods and Practices in Public Health, Inter-zone (1959 -) PAHO

To help countries of the Region to improve the administrative practices of national health services at all levels.

AMRO 3601 Administrative Methods and Practices in Public Health, Zone I (1968 -) PAHO

AMRO 3602 Administrative Methods and Practices in Public Health, Zone II (1968 -) PAHO

AMRO 3603 Administrative Methods and Practices in Public Health, Zone III (1967 -) PAHO

AMRO 3606 Administrative Methods and Practices in Public Health, Zone VI (1963 -) PAHO

To help the countries of the zone to improve the administrative methods and practices of their health services.

AMRO 3700 Health Planning, Inter-zone (1961 -) R PAHO

To assist governments in formulating national health plans and in training personnel for the purpose.

AMRO 3701 Health Planning and Organization, Zone I (1965 -) R PAHO

AMRO 3703 Health Planning and Organization, Zone III (1966 -) PAHO

AMRO 3704 Health Planning and Organization, Zone IV (1963 -) PAHO

AMRO 3706 Health Planning and Organization, Zone VI (1963 -) PAHO

To assist governments of the countries of the zone in formulating national health plans and in training personnel for the purpose.

AMRO 3715 Pan American Programme for Health Planning (1968 -) UNDP/SF PAHO

In collaboration with the Latin American Institute for Economic and Social Planning, to provide training in health planning, and to assist countries with health planning research.

AMRO 4109 Nursing and Midwifery (1962 -) PAHO

To assist countries of the Region in improving their maternity care services and their institutions for the training of midwives.

AMRO 4117 Staffing of Maternal and Child Health Services (1970 -) PAHO

To make an investigation of the functions of midwives and nurses in maternal and child health services.

AMRO 4119 Maternal and Child Health Fellowships (1970 -) Grant to PAHO: Ford Foundation

To provide fellowships for candidates from countries of the Region for study at the Latin American Centre for Perinatology and Human Development in Uruguay.

AMRO 4200 Nutrition Advisory Services, Inter-zone (1958 -) R PAHO

To provide advisory services in nutrition to meet specific needs of governments.

AMRO 4201 Nutrition Advisory Services, Zone I (1961 -) R

To collaborate with the countries and territories of Zone I in the study and evaluation of nutrition problems and needs; in planning, in close co-operation with national and international agencies, nutrition education programmes and programmes to foster the production of protein-rich foods; and in integrating nutrition programmes into health services at all levels.

AMRO 4203 Institute of Nutrition of Central America and Panama, Guatemala City (1949 -) PAHO
Various Grants to PAHO (INCAP Member Governments)

To co-operate in developing the Institute of Nutrition of Central America and Panama (INCAP), which trains professional and auxiliary personnel from its member countries and other countries in the Americas and carries out nutrition research for solving the urgent problems created by the inadequate nutritional status of a large part of the population of the Americas.

AMRO 4204 Nutrition Advisory Services, Zone IV (1956 -) R (University of Puerto Rico)

To advise the countries of the zone on the development of nutrition programmes, especially at the level of the local health services; on applied research related to nutrition programmes; and on the training of personnel.

AMRO 4207 Caribbean Food and Nutrition Institute (1963 - 1973) R PAHO Grants to PAHO: Research Corporation; Rockefeller Foundation (Governments of Jamaica and of Trinidad and Tobago)

To assist the Food and Nutrition Institute, which carries out training programmes in applied nutrition, undertakes field investigations on problems of community nutrition, and co-ordinates activities in food and nutrition throughout the English-speaking countries and territories of the Caribbean area.

AMRO 4225 Graduate Course in Public Health Nutrition (1969 -) R

To assist a centre that has been established in Puerto Rico to provide graduate training in public health nutrition, in Spanish, for supervisory level personnel in national nutrition units and for teaching staff of training institutions.

AMRO 4230 Nutrition Training (1969 -) PAHO

To assist schools offering courses at university level to develop curricula for preparing students for leading posts in nutrition and dietetics in the public health services.

AMRO 4300 Mental Health, Inter-zone (1965 -) PAHO

To assist mental health programmes in countries of the Region.

AMRO 4400 Dental Health, Inter-zone (1954 -) PAHO

To promote the development of dental health, and particularly of dental public health, in the countries of the Region, and assist in training various types of dental personnel.

AMRO 4409 Fluoridation of Water Supplies

(1967 - 1972) PAHO Grant to PAHO: Kellogg Foundation

To provide technical training in the fluoridation of water supplies to sanitary engineers and other key personnel and to disseminate information on the subject.

AMRO 4410 Laboratory for Control of Dental Products

(1968 - 1972) PAHO

To assist in the establishment in Caracas, Venezuela, of an international pilot centre for promoting national programmes to improve the quality of dental materials used by public institutions and dentists in private practice, control the quality of dental products produced locally or imported, establish up-to-date national specifications for dental products, train teachers and researchers in this field, and conduct applied research on dental materials.

AMRO 4411 Human and Material Resources in Dentistry

(1967 -) PAHO

To study the current position as regards human and material resources in dentistry available in Latin America; and to assist in formulating and implementing plans for the development of dental resources.

AMRO 4500 Health Aspects of Radiation

(1958 -) R PAHO

To stimulate the adoption of international standards and procedures for radiation protection in connexion with the use of X-rays and radioisotopes and the development of regulations for the disposal of radioactive wastes; to promote the teaching of basic health physics, radiobiology, and radiation protection in medical, dental, veterinary public health, and other professional schools; to foster the use of radioisotopes for medical diagnosis, therapy, and research; and to collaborate with countries of the Region in establishing sampling stations for determining the radioactive contamination of air, food and water.

AMRO 4507 Radiation Health Protection (1964 -) PAHO

To advise governments on protection against radiation hazards.

AMRO 4509 Radiation Surveillance (1962 -) PAHO

To assist governments in the Region in organizing radiation surveillance programmes.

AMRO 4512 Scientific Group for the Establishment of a Multinational Programme in Nuclear Medicine, Washington, D.C. (3 - 6 March 1970) R

The purpose of the meeting was to consider the establishment of a multinational programme in nuclear medicine. Experts from Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru and Venezuela attended, together with representatives of the International Atomic Energy Agency and the Inter-American Nuclear Energy Commission of the Organization of American States and observers from four institutions in the United States of America. The group discussed the establishment of priorities

for a multinational programme in clinical research involving the use of radioisotope techniques, standardization of methods, and methods of improving communication among research workers. Recommendations for national laboratories and international organizations were included in the report.

The Organization met the cost of attendance of eight participants and provided the services of staff members.

AMRO 4617 Manganese Poisoning

(1964 - 1971) Grant to PAHO: US Public Health Service

To assist research on the mental and neurological syndrome produced by chronic inhalation of dust containing manganese.

AMRO 4700 Food and Drug Control, Inter-zone

(1959 -) PAHO

To provide technical advice to the national services responsible for the health aspects of production and control of foods, drugs and biologicals, both locally manufactured and imported; and to assist countries in improving national control services.

AMRO 4703 Food Reference Laboratory, Zone III

(1964 -) PAHO

To develop the food analysis laboratory that has been set up at the Institute of Nutrition of Central America and Panama to act as a reference laboratory for the countries of the zone.

AMRO 4710 Food and Drug Administration, Zone III

(1967 -) R

To assist the countries of the zone in establishing, in ministries of health, units for the registration and analysis of all foodstuffs and drugs; to provide technical advice and assist in training personnel; to promote the adoption or revision of relevant legislation; and to assist in the organization of local courses and seminars.

AMRO 4711 Drug Control Seminar, Maracay, Venezuela

(15 - 20 Nov. 1970) PAHO

The purpose of the seminar was to study the immediate and long-term needs for providing the countries of the Americas with adequate services for the quality control of drugs. It was attended by 29 senior drug control officials from 24 countries of the Americas. They heard lectures on drug control problems and formulated recommendations for action to improve the drug control situation in the Region.

The Organization provided seven consultants, supplies, and advisory services by staff members, and met the cost of attendance of participants.

AMRO 4800 Medical Care Services, Inter-zone

(1961 -) PAHO

To assist countries of the Region with studies associated with aspects of planning, organization, training, and applied research in medical care services.

AMRO 4801 Medical Care Services, Zone I (1970 -) R**AMRO 4803 Medical Care Services, Zone III**

(1962 -) PAHO

AMRO 4804 Medical Care Services, Zone IV

(1963 -) PAHO

AMRO 4806 Medical Care Services, Zone VI

(1970 -) PAHO

To assist countries of the zone in integrating medical care services into the general health services and in formulating standards for medical care.

AMRO 4810 Chronic Diseases (1967 -) PAHO

To assist Latin American countries on problems of chronic diseases and on the planning of projects for prevention and control.

AMRO 4813 Hospital Planning and Administration (1968 -) R PAHO

To assist countries in improving hospital and medical care facilities, in establishing maintenance programmes, and in planning new facilities to meet the increasing demand for services.

AMRO 4815 Training for Medical Care and Hospital Administration (1967 -) R PAHO

To develop the programmes of training in administration of medical care and hospital services at schools of public health, schools of medicine and other institutions in Latin America.

AMRO 4816 Progressive Patient Care (1967 -) Grant to PAHO: Kellogg Foundation

To assist in setting up, in Latin American university hospitals, intensive care units that will also serve for demonstration and teaching purposes. (See page 136.)

AMRO 4825 Survey on Smoking Patterns in Latin America (1970 - 1971) Grant to PAHO: American Cancer Society

To determine the extent and characteristics of the tobacco-smoking habit in eight Latin American cities and study the attitudes of the population in relation to smoking and health.

AMRO 4900 Health and Population Dynamics (1968 -) PAHO Grant to PAHO: AID

To advise on planning and programming in health aspects of population problems; maintain liaison with other organizations concerned; help governments to analyse existing family planning programmes and to study the possibility of introducing family planning services and plan and organize such services; administer funds obtained for demonstration and pilot programmes to be undertaken by the Organization; promote education and training in the health aspects of population dynamics; develop programmes of education of the public in the subject; and stimulate research on the psychological, sociological, epidemiological and physiological aspects of human reproduction and fertility.

AMRO 4901 Health and Population Dynamics, Zone I (1968 -) R

To assist ministries of health in the zone in developing family planning programmes and integrating them into the health services.

AMRO 4908 Health and Social Welfare (1970 -) PAHO Grant to PAHO: University of Pittsburgh, USA

To explore the relationship between health and social welfare, identify the main relevant problems and define a policy for the relationship.

AMRO 5000 Rehabilitation, Inter-zone (1962 -) R PAHO

To advise countries of the Region on problems of medical rehabilitation.

AMRO 5008 Conference in Rehabilitation, Mexico City (19 - 29 Oct. 1970) R (UN) (Government of Mexico)

The purpose of the conference, which was organized in collaboration with the Government of Mexico and the United Nations, was to discuss methods of providing rehabilitation services in Latin America, the training of physical and occupational therapists, and the role of social services in rehabilitation. There were 38 participants and five observers.

The Organization provided a consultant and advisory services of staff members, and met the cost of attendance of 21 participants. The cost of attendance of the other participants was met by the Government of Mexico and the United Nations.

AMRO 6000 Medical Education: Textbooks and Teaching Materials (1967 -) PAHO Special Fund for Health Promotion

To raise the level of medical education by providing textbooks at a lower cost to students; to develop a co-operative arrangement with medical schools in order to ensure the selection of textbooks of high scientific and pedagogical quality; and to establish a revolving fund to ensure continuity of the programme. (See page 136.)

AMRO 6100 Schools of Public Health (1953 -) R PAHO

To assist schools of public health in the Region, especially the newer ones, to strengthen and improve their organization, administration and teaching.

AMRO 6101 Health Manpower Studies, Zone I (1969 -) R Grant to PAHO: Milbank Memorial Fund

To assist in developing and evaluating long-term plans for strengthening health manpower resources in the Caribbean area through collaboration between the University of the West Indies and the governments concerned.

AMRO 6200 Medical Education, Inter-zone (1953 -) PAHO Grant to PAHO: Milbank Memorial Fund

To assist countries of the Region to improve medical education, including the teaching of social medicine.

AMRO 6203 Medical Education, Zone III (1970 -) PAHO**AMRO 6204 Medical Education, Zone IV (1966 -) PAHO**

To assist medical schools in countries of the zone in improving programmes and methods of medical education.

AMRO 6208 Teaching of Statistics in Medical Schools (1961 -) PAHO

To promote the teaching of medical statistics in schools of medicine in Latin America.

AMRO 6210 Teaching Methods and Administrative Organization of Medical Schools (1964 - 1972) PAHO

To organize group discussions and seminars for the purpose of assisting medical schools in the Region to review and improve their teaching methods and administrative procedures.

AMRO 6214 Faculty Training for Medical Schools (1969 - 1972) Grant to PAHO: Kellogg Foundation

To improve the standards of medical education by providing grants to fellows who, after completion of a faculty-training programme at the Medical School of the University of Antioquia in Medellín, Colombia, return to their institutions for strengthening the teaching of the particular subject in which they received training.

AMRO 6216 Teaching of Preventive Medicine

(1965 -) PAHO Grant to PAHO: Milbank Memorial Fund

To make an assessment of the preventive medicine and community health teaching programmes in the medical schools in Latin America.

AMRO 6221 Regional Library of Medicine

(1970 -) PAHO Grants to PAHO: United States National Library of Medicine; Commonwealth Fund

To assist the Library of Medicine which was set up at the Paulista School of Medicine, São Paulo, Brazil, with the help of the Organization in 1967 (under project Brazil 6221) and which provides library support for biomedical education, research and practice in Latin America, and trains biomedical librarians at advanced level.

AMRO 6223 Teaching of Behavioural Sciences

(1969 -) PAHO

To provide seminar-courses which will bring to the attention of professors of behavioural sciences in the schools of medicine of Latin America the present bibliography in the area of their professional competence; and to provide them with an example of research and teaching in that field.

AMRO 6224 Faculty and Research Training Centres

(1969 -) PAHO

To assist in providing further opportunities for advanced training to medical teachers and investigators so as to enable them to pursue their work at an advanced level in Latin America and thus reduce their incentive to emigrate.

AMRO 6225 Evaluation of Fellowships Programme

(1969 -) R

To carry out an evaluation of the fellowships programme of the Organization in the Region in order to assess the results achieved and their effects on health programmes, and to guide the governing bodies in the determination of future policy in this field; and to conduct a study on the possibility of awarding within-country fellowships as a means of promoting optimum utilization of the resources available for training personnel in candidates' home countries.

AMRO 6300 Nursing Education, Inter-zone (1962 -) R

To assist in strengthening nursing education and training programmes in countries of the Region.

AMRO 6301 Nursing Education, Zone I

(1963 -) PAHO

To assess the nursing resources in countries and territories of the Caribbean area; and to carry out a long-term plan for the improvement of nursing services.

AMRO 6310 Programmed Instruction for Nursing Auxiliaries (1965 - 1969) PAHO PAHO Special Fund for Health Promotion

The original aim was to develop programmed instruction courses for nursing auxiliaries, in order to prepare the large numbers of untrained staff working in the health services in Latin America. Later, the project was redefined to include assistance to governments in increasing the effectiveness of nursing auxiliaries by modifying the content of the training programmes and improving teaching methods. The Organization met costs of a seminar in 1965, provided a nurse educator and secretarial services from 1966 to 1968 and defrayed temporary

personnel costs in 1969. The services of regional headquarters and project staff, and supplies and equipment, were also provided.

The main activities of the project were as follows: (i) A six-week workshop on programmed instruction, sponsored by the Organization and directed by the Teachers' College of Columbia University (USA), was attended by 15 nurse educators. A programmed instruction text entitled "Introduction to Immunology", written during the workshop, was translated into Spanish and tested in Mexico. (ii) A one-month course was given for 25 instructors of nursing auxiliaries from six Latin American countries, emphasis being placed on the need to identify the tasks for which nursing auxiliaries should be prepared and to carry out field testing of programmed instruction texts. Several programmed instruction texts on nursing were translated into Spanish, and trials made of two of them. (iii) A field study of nursing activities was undertaken in Lima, Peru, the objective being to ascertain what tasks are performed by nursing auxiliaries in inpatient and outpatient services and to use the information obtained for curriculum planning. A seminar with 28 participants was held to analyse the study findings.

AMRO 6319 Training of Nursing Auxiliaries

(1970 - 1975) R

To assist in providing adequately trained nursing auxiliaries for the health services through the improvement of existing courses and the establishment of new ones, the preparation of instructors, and the development of continuing education programmes.

AMRO 6400 Sanitary Engineering Education, Inter-zone

(1952 -) PAHO

To assist countries of the Region in expanding their institutions for training sanitary engineers and in revising the curricula.

AMRO 6500 Veterinary Medicine Education (1966 -) R

To strengthen the teaching of veterinary medicine, particularly as regards the preventive medicine and public health aspects.

AMRO 6600 Dental Education (1963 -) PAHO

To co-operate with university authorities of countries of the Region in improving teaching in schools of dentistry.

AMRO 6608 Training of Auxiliary Dental Personnel

(1965 -) PAHO

To promote the training of various kinds of dental auxiliary personnel and their use for work for which a fully qualified dentist is not necessary, so as to permit the extension of dental services to the population and reduce their cost.

AMRO 6609 Latin American Association of Dental Schools

(1965 - 1972) Grant to PAHO: American Dental Association

To assist the Latin American Association of Dental Schools in its programmes for the promotion of the teaching of dentistry in Latin America.

AMRO 6700 Biostatistics Education (1952 - 1975) UNDP/TA

To improve vital and health statistics in the countries of the Region by training technical and professional personnel in specialized centres.

AMRO 6707 Latin American Centre for the Classification of Diseases (1955 -) R

To study problems of medical certification of causes of death; to give training on classification of causes of death in accordance with the International Classification of Diseases; and to assist in revising the Classification.

AMRO 6708 Training Programme in Hospital Statistics
(1961 -) PAHO

To provide training in medical records and in hospital statistics with the aims of facilitating the planning of efficient health and hospital services, improving patient care, and obtaining information on the health status of the population.

AMRO 6709 Research and Training Programmes in Health and Population Dynamics (1966 - 1969) Grant to PAHO: AID

The purpose was to assist the planning and implementation of research and training programmes in population dynamics and its relationship to public health and medical care at the

University of São Paulo, Brazil, and the University of Chile. In 1968 the Organization provided six consultants, seven temporary advisers and three short fellowships and, in 1969, nine consultants and seminar and local costs. In addition, audio-visual equipment was provided for the programmes at both universities. Twenty-two fellowships for the programme given at the University of Chile were awarded to students from Argentina, Brazil, Colombia, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Peru and Venezuela. For the University of São Paulo programme, 41 fellowships were awarded to students from Brazil, Colombia, Mexico, Nicaragua and Venezuela. Six faculty members from the University of São Paulo and two from the University of Chile received fellowships for study abroad.

SOUTH-EAST ASIA REGION

Burma 0006.2 Maternal and Child Health (1969 - 1973) R UNICEF

To strengthen the departments of paediatrics and obstetrics in medical colleges and major hospitals and improve the teaching in these subjects, especially as regards the preventive aspects; and to improve and expand maternal and child health services as part of the general health services.

Burma 0017 Leprosy Control (1960 - 1972) R Special Account for the Leprosy Programme UNICEF

To expand and intensify the leprosy control programme to cover all endemic areas of the country and to train personnel for the purpose.

Burma 0028 Institute of Medicine I and School of Preventive and Tropical Medicine, Rangoon (1955 - 1959; 1961; 1963; 1966 - 1977) UNDP/TA

To improve the teaching of undergraduates and promote research and postgraduate study in departments of the Institute of Medicine I, and to develop the diploma course at the School of Preventive and Tropical Medicine.

Burma 0031 Malaria Eradication Programme (1957 - 1966; 1968 -) R

To eradicate malaria throughout the country in progressive stages.

Burma 0044.2 Strengthening of Health Services (Epidemiology) (1968 - 1977) UNDP/TA

To strengthen the Epidemiological Unit in the Directorate of Health Services through epidemiological surveillance of important communicable diseases for the purpose of obtaining information on the prevailing trends in these diseases as a prerequisite for sound planning of control, including vaccination, policies; to develop public health laboratory services in support of these activities.

Burma 0056.2 Nursing Advisory Services (1959 - 1966; 1969 -) R

To develop nursing and midwifery education and services.

Burma 0065 Tuberculosis Control (1964 - 1972) UNDP/TA UNICEF

To develop community-oriented tuberculosis services and to implement integrated divisional control programmes in all parts of the country, in accordance with the Government's long-term plan.

Burma 0067 Paediatric Education (1970) R

A three-week fellowship was awarded under this project, for which staff, fellowships and equipment were provided between June 1964 and November 1968.

Burma 0069 Trachoma Control (1966 - 1967; 1970 -) R UNICEF

To develop a trachoma control programme.

Burma 0072 National Community Water Supply and Sanitation Programme (1969 -) R

To plan, organize and administer a national environmental health programme, strengthen the Division of Environmental Sanitation of the Directorate of Health Services, and draw up a comprehensive long-term programme for community water supplies and waste disposal.

Burma 0074 Strengthening of Laboratory Services (1967 - 1977) R

To strengthen laboratory services and promote their development at state and divisional levels. This project is co-ordinated with project Burma 0044.2 (see above).

Burma 0077 Burma Pharmaceutical Industry (1964; 1968 - 1977) R UNICEF

To modernize the methods of production and control (by manufacturers and national) of immunobiologicals, bacterial and viral vaccines, toxoid preparations, antitoxins and other biological products. Also to introduce modern methods for the utilization in immunization programmes of the vaccines produced.

Burma 0078 Plague Control (1966; 1970 - 1977) R

To identify the factors responsible for the persistence of foci of plague and train personnel in the epidemiology and control of the disease.

Burma 0079 Medical Education (1964 - 1977) R

To improve undergraduate and postgraduate medical education, train teaching staff, develop the curricula in keeping with modern concepts, and initiate and promote research.

Burma 0080 Smallpox Eradication (including Vaccine Production (1967 - 1971) R

To carry out the maintenance phase of the smallpox eradication programme and establish a surveillance system.

Burma 0083 Education in Dentistry (1967 -) UNDP/TA

To strengthen dental education.

Burma 0085 Maintenance and Repair Workshop for Health Equipment (1969 - 1971) R UNICEF

To establish a school for training technicians for the maintenance and repair of X-ray and electro-medical equipment.

Burma 0087 Filariasis Control (1969 - 1977) R

To implement measures for the control of filariasis, starting in the Rangoon area.

Burma 0088 Rehabilitation of the Handicapped (1969 -) R

To expand medical rehabilitation services and improve workshop facilities for the manufacture of orthopaedic and prosthetic appliances.

Burma 0089 Institute of Technology, Rangoon
(1969 - 1972) R UNDP/TA

To teach sanitary engineering to undergraduate and graduate civil engineering students.

Burma 0091 Radiation Health (1970 - 1975) R

To strengthen radiation protection services in hospitals.

Burma 0092 Quality Control of Drugs (1970 -) R

To formulate new legislation and develop laboratory competence in the quality control of pharmaceutical and biological preparations.

Burma 0094 Strengthening of Health Services (1969 - 1972) R

To strengthen the health services, particularly the rural health services, and to train health personnel for basic health services. The first stage of the work will consist in the preparation of a plan of operation, followed by a national health plan.

Burma 0200 Fellowships R: Virology (one for six weeks, one for 14 weeks, one for four months).

Burma 0201 Fellowships UNDP/TA: Tropical public health (six weeks).

Ceylon 0005.2 Venereal Disease Control (1964; 1966 -) R

To develop laboratory diagnostic facilities for the national venereal disease control programme.

Ceylon 0026.2 Leprosy Control (1967 - 1972) R

To assess the leprosy problem and plan the further development of the leprosy control programme.

Ceylon 0037 Mental Health
(1955 - 1956; 1960 - 1961; 1963; 1966 - 1967; 1969 -) R

To develop mental health care within the framework of comprehensive health services, strengthen the teaching of mental health in the undergraduate curriculum and train various categories of health personnel.

Ceylon 0038 Strengthening of Health Services (Epidemiology)
(1967 - 1968; 1970 -) R

To train personnel in epidemiology.

Ceylon 0045 Health Statistics
(1957 - 1961; 1964 - 1974) UNDP/TA

To revise the system of records and reports in the health services and to train personnel in the design of documents, the processing of statistical data and other advanced techniques in medical and health statistics.

Ceylon 0047 Medical Education (1959; 1963 -) R UNICEF

To strengthen teaching in certain subjects in the faculties of medicine of the University of Ceylon at Colombo and Peradeniya.

Ceylon 0053 Nursing Advisory Services
(1960 - 1967; 1969 - 1974) R

To develop nursing and midwifery education through the Nursing Unit in the Department of Health, carry out studies that will provide accurate information on nursing and midwifery, and implement programmes for improving nursing and midwifery services.

Ceylon 0056 Filariasis Control
(1959; 1961; 1963; 1965 - 1972) UNDP/TA

To study the problem of filariasis control and strengthen the control programme, introducing such new methods as may be indicated.

Ceylon 0058 Malaria Eradication Programme
(1960 -) R (AID)

To eradicate malaria.

Ceylon 0063.2 Medical Rehabilitation (1968 - 1971) R

To improve medical rehabilitation services and train personnel.

Ceylon 0064 Community Water Supply
(1963 - 1975) R UNICEF

To develop water supply and sewerage schemes and train personnel.

Ceylon 0066.3 Strengthening of Laboratory Services
(1966 - 1972) R

To strengthen diagnostic services for virus diseases by training staff in tissue culture techniques.

Ceylon 0071 Radiation Health (1969 - 1972) R

To organize one-month courses in radiation protection for the staff concerned with the operation of radiological equipment; and to train staff associated with the radiation protection services and keep the services up to date.

Ceylon 0072 Health Education (1966 - 1967; 1969 - 1977) R
To strengthen the health education services.

Ceylon 0075 Tuberculosis Control (1966 - 1974) R UNICEF

To organize a community-oriented integrated tuberculosis control programme based on a pilot area project in the North-western Province; to implement provincial control programmes, in time, in all provinces; to continue the BCG vaccination programme throughout the country, and to secure eventual integration into the work of the general health services.

Ceylon 0082 Industrial Hygiene (1968 -) R

To develop industrial hygiene legislation and evaluate hazards in large and small industries; and to develop occupational health and industrial hygiene services.

Ceylon 0083 Port Health Services (1969 -) R

To strengthen port health services.

Ceylon 0084 Maternal and Child Health Services
(1968 - 1971) R

To improve the preventive and curative maternal and child health and family health services, and to provide courses on maternal and child health for nursing and medical personnel.

Ceylon 0085 Control of Nutritional Anaemia (1969 - 1971) R

To undertake a pilot project for the control of anaemia, preceded by a survey to assess the prevalence rates of different types of nutritional anaemia.

Ceylon 0086 Public Water Supply, Drainage and Sewerage for the South-west Coastal Area (1967 - 1972) UNDP/SF

To carry out pre-investment studies for high-priority water supply and sewerage schemes in the south-west coastal area.

Ceylon 0087 Dental Health (1970 - 1974) R

To develop the teaching and training programmes for dental personnel and expand integrated dental health services.

Ceylon 0089 Freeze-dried Smallpox Vaccine Production
(1969 -) R

To achieve self-sufficiency in the production of freeze-dried smallpox vaccine of standard quality.

Ceylon 0092 National Health Planning (1970 - 1972) R

To establish and strengthen a national health planning unit in the Ministry of Health and train health personnel in health planning.

Ceylon 0200 Fellowships R: Cardiology (two for three months), medical stores management (two for two months), oral cytopathology (12 months), public health (12 months), vital and health statistics (three months).

India 0053 Tuberculosis Chemotherapy Centre, Madras
(1955 - 1974) UNDP/TA

To undertake controlled trials to find simple, effective and inexpensive methods of tuberculosis control through domiciliary chemotherapy of ambulant patients, and to carry out related research.

India 0081.1 Leprosy Control (National Programme)
(1961 - 1973) R UNICEF

To develop a programme of leprosy control.

India 0081.2 Leprosy Control, Srikakulam
(1962 - 1973) R UNICEF

To provide technical direction for a leprosy control project supported by the Danish "Save the Children" Organization, and to train leprosy auxiliary personnel.

India 0103 National Tuberculosis Programme
(1956 - 1974) UNDP/TA UNICEF

To develop a national tuberculosis control programme by providing technical guidance, based on the results obtained in model rural and urban tuberculosis control programmes, epidemiological findings and operational research; to train sufficient public health workers of various categories for the tuberculosis control centres at district and state levels, and to develop adequate methods and procedures for assessment of the programme.

India 0110 Nursing Advisers to States (1970) UNDP/TA

Four fellowships were awarded under this project, for which staff and other assistance were provided between 1957 and 1968.

India 0111 Medical Education (1958 - 1961; 1965 -) R
To strengthen selected medical colleges.

India 0114 Paediatric and Obstetric Training and Services: Assistance to States (1958 - 1977) R UNICEF

To strengthen the paediatric and obstetric departments of selected medical colleges and non-teaching and district hospitals.

India 0114.1 Paediatric and Obstetric Training and Services, Kerala (1970 - 1977) R UNICEF

To strengthen maternal and child health nursing services and education in Kerala State and in selected hospitals, public health units and nursing education institutions in India.

Under the first phase of this project, assistance in upgrading the teaching of paediatrics in Trivandrum Medical College was provided between 1958 and 1965.

India 0114.6 Paediatric and Obstetric Training and Services, Chandigarh (Nov. 1965 - June 1970) R UNICEF

The aim was to strengthen maternal and child health nursing through (i) a post-basic course in the subject at the College of Nursing, Institute of Postgraduate Medical Education and Research, Chandigarh; (ii) supplementary courses in paediatric nursing and neo-natal nursing; and (iii) advice on nursing services in paediatric and obstetric wards and outpatient clinics. WHO provided a paediatric nurse educator to the College of Nursing from November 1965 to December 1969 and a paediatric nurse to the Nehru Hospital, Chandigarh, from May 1967 to June 1970, as well as supplies and equipment.

The paediatric nurse educator assisted in developing the post-basic degree programme in maternal and child health nursing at the College of Nursing. A counterpart was appointed in 1969 and the programme was fairly well established by the time the project ended. At the School of Nursing of Nehru Hospital, which is part of the Postgraduate Institute, three-month courses in paediatric nursing began in September 1967, one-month courses in neo-natal nursing in September 1968. By 1970 six paediatric nursing courses had been given for a total of 122 nurses and five neo-natal nursing courses for a total of 22 nurses. In order to improve the standard of nursing studies and education at the hospital, three members of the nursing staff have been assigned each year to follow the post-basic degree programme in nursing administration and education or in maternal and child health nursing at the College of Nursing. Improvements have been made in the physical facilities of the obstetrical and paediatric departments of the Nehru Hospital. Assistance in improving the nursing services in these departments is continuing under the nursing administration project India 0212.1.

India 0121 Indian Council of Medical Research (Statistics)
(1962 - 1974) R

To organize and co-ordinate medical research.

India 0136.2 Post-basic Nursing Education, Gujarat
(1963 - 1974) R

To expand post-basic nursing education and upgrade public health and institutional nursing services in the state.

India 0136.3 Post-basic Nursing Education, Punjab
(1964 - 1974) R

India 0136.5 Post-basic Nursing Education, Madras
(1964 - 1974) R

To set up a post-basic school of nursing affiliated with a university.

India 0136.7 Post-basic Nursing Education, New Delhi
(1969 - 1974) R

To strengthen the Master of Nursing degree programme at the College of Nursing, New Delhi.

India 0136.8 Post-basic Nursing Education, Maharashtra
(1970 -) R

To expand post-basic nursing education at the College of Nursing, Bombay.

India 0153 Malaria Eradication Programme
(1958 -) R (AID)

To eradicate malaria.

India 0173 Production of Diphtheria/Pertussis/Tetanus Vaccine, Kasauli (1961; 1965 - 1968; 1970 -) R UNICEF

To increase the production of diphtheria/pertussis/tetanus vaccine at the Central Research Institute, Kasauli.

India 0174 Production of Freeze-dried Smallpox Vaccine (1964 -) R UNICEF

To increase the production of freeze-dried smallpox vaccine.

India 0176 Central Public Health Engineering Research Institute, Nagpur (1961 - 1977) R

To develop the Central Public Engineering Research Institute as a major research centre for environmental sanitation problems, co-ordinate research programmes and train research workers.

India 0182 Strengthening of Health Services (Epidemiology) (1963 - 1974) UNDP/TA

To establish or improve health intelligence units in state health directorates; to train staff in epidemiology, health statistics, microbiology and communicable disease control; and to develop the National Institute of Communicable Diseases, Delhi.

India 0185.2 and 3 Strengthening of Health Services, Punjab and Haryana (1967 - 1974) R UNICEF

To strengthen the national health services at state, district and local levels, giving particular attention to the provision of training programmes for health staff and the supervision of auxiliary staff by professional staff, and to operational studies.

India 0187 Training of Radiographers (1967 - 1975) R

To raise the standard of training of radiographers at the Institute of Postgraduate Medical Education and Research, Chandigarh.

India 0188 Strengthening of Laboratory Services (1965 - 1977) R

To strengthen health laboratory services and improve the training of laboratory technicians. (See page 144.)

India 0190 Training in Health Education (1968 - 1977) R

To establish and develop three postgraduate health education training centres with rural and urban field practice areas.

India 0192 Radiation Medicine Centre, Bombay (1963; 1967 - 1977) R

To strengthen the Radiation Medicine Centre, Bombay.

India 0194 Medical Rehabilitation (1963 - 1964; 1967; 1969 -) R UNICEF

To expand medical rehabilitation services and establish training schools in the various disciplines.

India 0197 Occupational Health (1964; 1970 -) R

To conduct courses in occupational health and to initiate research projects in specific industries.

India 0199 School for Training of Technicians (1967 - 1977) UNDP/TA UNICEF

To train technicians for the installation, maintenance and repair of X-ray apparatus and other electro-medical equipment.

India 0200 Fellowships R: Dental public health (two for nine months), public health engineering (three for four months).

India 0201 Fellowships UNDP/TA: Freeze-dried vaccine production (three months).

India 0208 Improvement of Dental Education (1966 - 1977) UNDP/TA

To improve and strengthen dental education and research in a dental college.

India 0209 Community Water Supply (1964 - 1965; 1968 -) R

To study the feasibility and the financial and managerial aspects of water supply and drainage schemes.

India 0210 Public Health Engineering Education (1967 - 1972) UNDP/TA

To improve the education and training of sanitary engineers and develop advanced courses in design for community water supply programmes.

India 0212.1 Nursing Administration, Chandigarh (1968 - 1973) R

India 0212.2 Nursing Administration, Gujarat (1968 - 1973) R

To develop sound nursing administration in teaching hospitals and promote in-service training and co-ordination of nursing services.

India 0214 Virological Techniques (1968 - 1977) R

To establish facilities for (i) the diagnosis and epidemiological studies of virus diseases; (ii) the production of virus vaccines, including attenuated live poliomyelitis vaccine; and (iii) independent testing of vaccines.

India 0218 National Institute of Health Administration and Education, New Delhi (1965 - 1974) R UNICEF

To teach hospital and health administration and to plan comprehensive district health services.

India 0222 Drug Laboratory Techniques and Biological Standardization (1967 - 1972) R

To plan facilities for the quality control of drugs and to train personnel.

India 0225 Freeze-dried BCG Vaccine Production (1968; 1970 -) R

To produce thermostable BCG vaccine.

India 0232 Course in Hospital Physics (1967 - 1974) R

To train hospital physicists.

India 0233 Smallpox Eradication (1967 -) R

To develop the smallpox eradication programme, carry out periodic assessments and train staff.

India 0236 Penicillin Production (1970 -) R Special Account for the Yaws Programme

To improve the production of penicillin.

India 0238 Cancer Control Pilot Project, Madras (1968 - 1973) R

To start a cancer control project and set up a training centre.

India 0244 Training in Veterinary Public Health
(1967 -) R

To initiate studies of zoonoses at the National Institute of Communicable Diseases, Delhi, the Haffkine Institute, Bombay, the Indian Veterinary Research Institute, Mukteswar-Kumaon, and other institutions, public health laboratories and medical colleges.

India 0250 Integration of Maternal and Child Health Services into the General Health Services (1967 - 1968; 1970 -) R

To integrate maternal and child health services, including family planning services, into the general health services in certain states.

India 0251 Groundwater Training Course (1970 - 1974) R

To train staff in groundwater development and utilization for community water supplies.

India 0255 Strengthening of Health Statistics Services
(1970 -) R

To develop and strengthen health intelligence units in state health departments and train national statistical staff.

India 0257 Physical Therapy School, Baroda (1968 - 1977) R

To establish and strengthen a physical therapy school in Baroda.

India 0259 National Institute of Communicable Diseases, Delhi
(1967 - 1971) R

To strengthen the faculty of the National Institute of Communicable Diseases in order to improve the field training of epidemiologists.

India 0264 Cancer Research Institute, Tata Memorial Centre, Bombay (1970 -) UNDP/TA

To initiate research connected with the extraction of protein from cobra venom in relation to cancer.

Indonesia 0009 Leprosy Control (Feb. 1970) R

A consultant helped to prepare guidelines for case-detection and management of leprosy cases, utilizing the existing health services.

The leprosy control programme in Indonesia was assisted by WHO between 1955 and 1968.

Indonesia 0032 Malaria Eradication Programme
(1955 - 1974) R

To eradicate malaria throughout the country by stages.

Indonesia 0050 Tuberculosis Control (1961 - 1972) R UNICEF

To implement a BCG vaccination programme, using the direct vaccination method and, finally, to integrate the programme into the work of the maternal and child health clinics and regency polyclinics; to train the necessary staff for the planned programme activities; and to extend tuberculosis case-finding by microscopic sputum examination and ambulatory treatment of cases and integrate the two activities.

Indonesia 0060 Laboratory Services (1967 -) R UNICEF

To strengthen health laboratory services.

Indonesia 0061 Training in Sanitary Engineering (1968 -) R

To provide facilities for education, training and research in environmental sanitation, including research on the public health aspects of housing.

Indonesia 0062 Medical Education (1964 - 1974) R

To develop the teaching programmes of the medical faculties in keeping with national needs and the progress of medical science.

Indonesia 0069 Training of Radiographers and Electro-medical Technicians (1966 - 1974) R

To establish a school for training technicians in the maintenance and repair of X-ray and electro-medical equipment.

Indonesia 0071 National Community Water Supply and Sanitation (1969 - 1974) R

To plan a community water supply, sewerage and storm-water drainage system, water pollution control and general sanitation work.

Indonesia 0072 Establishment of Health Centres, Province of West Irian

(1970 -) Fund of the United Nations for the Development of West Irian

To develop, in West Irian, an integrated health service along the lines consistent with the facilities and resources available, co-ordinate projects in the health sector, and train technicians in the maintenance and repair of hospital equipment.

Indonesia 0074 Nursing Education and Services
(1967; 1969 - 1976) R

To strengthen and develop nursing and midwifery education and services, with emphasis on (i) the definition and development of an effective personnel system; (ii) the preparation of teachers, administrators and clinical specialists; (iii) the administration of services at national and local levels; and (iv) the building-up of the services as an integral part of the general health services. Also, to define and develop the role of nursing and midwifery personnel in family planning programmes.

Indonesia 0075 Hospital Statistics (1968 -) R

To organize an efficient system for the maintenance and flow of records in certain hospitals; to collect, process and present hospital statistics, and to train medical records and hospital statistics personnel.

Indonesia 0076 Malaria Control, Province of West Irian

(1970 - 1972) Fund of the United Nations for the Development of West Irian

To carry out an independent examination of the antimalaria work being carried out and make recommendations for future activities.

Indonesia 0078 Health Education (1968 - 1977) UNDP/TA

To strengthen the teaching of health education in the School of Public Health, build up the health education services and hold national workshops as a follow-up to the inter-country project SEARO 0130 (Development of health education).

Indonesia 0079 Dental Health (1968 - 1975) UNDP/TA

To strengthen the training of dental auxiliaries.

Indonesia 0081 Smallpox Eradication

(1967 -) R Special Account for Smallpox Eradication

To develop a national smallpox eradication programme and train vaccinators and other health workers.

Indonesia 0083 Vaccine and Sera Production
(1968 - 1974) UNDP/TA

To improve methods of producing bacterial and viral vaccines, antitoxins and toxoids, and develop facilities for testing the vaccines and sera produced.

Indonesia 0084 Nursing Education and Training, Province of West Irian
(1970 -) Fund of the United Nations for the Development of West Irian

To strengthen and develop nursing and midwifery services and education in West Irian, with emphasis on the assessment of nursing and midwifery needs and resources, the establishment of adequate record systems regarding nursing and midwifery personnel and training institutions, and the building-up of training centres.

Indonesia 0086 Strengthening of National Health Services
(1969 -) R UNICEF

To plan, co-ordinate and integrate health services and programmes, standardize and intensify the training programmes for health personnel, and promote studies of public health practice intended to lead to the optimum delivery of health care.

Indonesia 0090 Hazards to Man from Pesticides (1969 -) R

To formulate legislation regarding hazards to man from pesticides in use in agriculture, train laboratory workers in the determination of cholinesterase levels, and carry out further studies to ascertain the size of the problem. (See page 143.)

Indonesia 0091 Strengthening of Epidemiological Services
(1969 -) R

To develop epidemiological units at the central and intermediate levels and train staff in the epidemiological approach to the analysis of public health problems.

Indonesia 0094 Integrated Maternal and Child Health Services
(1970 -) R

Two fellowships were awarded—one of two months in health education and family planning, and one of nine months in paediatrics.

Indonesia 0099 Plague Epidemiology (1969 -) R

To assess factors responsible for the persistence of plague and study any new foci of the disease.

Indonesia 0105 Occupational Health and Industrial Hygiene Services (1970 -) R

To develop occupational health and industrial hygiene services and prepare for the establishment of the National Institute of Occupational Health in Djakarta and three regional centres.

Indonesia 0107 Establishment of Cytology Services and Training as Part of the National Family Planning Programme
(1970 - 1972) UNFPA

To establish laboratory services for cytology, initially at each of the principal medical schools, as part of the national family planning programme.

Indonesia 0109 Workshop on National Plans for the Strengthening of Family Planning in Health Services, Djakarta
(6 - 9 Oct. 1970) UNFPA

The purpose of the workshop was to review the national plans for the strengthening of family planning services within the health services and formulate proposals for the development of the family planning programme. There were 60 participants—national public health administrators and teachers concerned with the organization and management of the programme—and 15 observers.

WHO provided a consultant and met the cost of attendance of participants.

Indonesia 0110 Workshop on Co-ordination of National and International Resources in the National Family Planning Programme, Djakarta (7 - 9 Oct. 1970) UNFPA

The purpose of the workshop was to discuss the co-ordination of international and bilateral assistance to the national family planning programme, taking into account the recommendations of the workshop on national plans for the strengthening of the programme (see project Indonesia 0109 above). The participants included 47 national officials concerned with health and family planning and 22 representatives of 14 international organizations and donor countries.

WHO provided a consultant, seven temporary advisers and the services of a staff member, and met the cost of attendance of participants.

Indonesia 0113 Family Health Services
(1970 - 1972) UNFPA

To prepare a plan of action for a project on integrated maternal and child health/family planning services as part of the master plan of operation for the strengthening of national health services in Indonesia; and to undertake such operational studies as are essential to confirm that family planning is most successfully delivered as an integral part of maternal and child health services within the framework of the general health services.

Indonesia 0200 Fellowships R: Drug and food control (four months), drug, food and cosmetic control (12 months), drug quality legislation (six months), epidemiology (two weeks), obstetrics teaching (12 months), occupational health (nine months), paediatrics (two for nine months, one for 12 months), public health administration (10 months).

Maldives 0005 Public Health Administration (1969 -) R

To develop comprehensive basic health services and train personnel, including health auxiliaries; to carry out antimalaria work, and to strengthen the services provided by the hospital in Male.

Maldives 0008 Nursing Services and Education
(1970 - 1975) UNDP/TA

To strengthen nursing and midwifery services and education, with emphasis on (i) training programmes for nurse aides, auxiliary nurse/midwives and indigenous midwives; (ii) nursing and midwifery services in the hospital in Male; (iii) community nursing and midwifery services, initially in Male; (iv) long-term planning for preparing nurse/midwives for training abroad; and (v) plans for securing effective administration of nursing services and education.

Maldives 0200 Fellowships R: Filariasis control (six months), leprosy control (six months), malaria entomology and parasitology (two for two months), tuberculosis control (14 weeks).

Maldives 0201 Fellowships UNDP/TA: Nursing (12 months), nursing and midwifery (12 months), undergraduate medical studies (12 months).

Mongolia 0001 Strengthening of Health Services (Epidemiology) (1963 - 1975) R

To carry out epidemiological surveys of the prevailing communicable diseases in order to plan practical control measures; to advise all branches of the medical and health services on the use of epidemiological methods, and to train personnel.

Mongolia 0002 Public Health Laboratory Services (1964 -) UNDP/TA UNICEF

To develop the health laboratory services and train personnel in health laboratory work.

Mongolia 0003 Tuberculosis Control (1963 - 1974) UNDP/TA

To implement a community-oriented tuberculosis control programme in all *aimaks* of the country, starting with a mass BCG vaccination programme and continuing with a maintenance programme of vaccination of new-born babies and children entering and leaving school.

Mongolia 0004 Maternal and Child Health Services (1965 - 1972) UNDP/TA

To develop the maternal and child health services and establish referral facilities.

Mongolia 0005 Environmental Health (Community Water Supply) (1966 - 1972) UNDP/TA

To develop water supplies and excreta disposal systems in provincial towns and rural areas.

Mongolia 0006 Medical Education (1970 -) R

To develop a programme of medical education adjusted to the needs of the country.

Mongolia 0007 Health Statistics (1967 - 1974) R

To develop health statistical services and train personnel in health statistics procedures.

Mongolia 0008 Nursing Services and Education (1966; 1968 - 1977) R

To set up a basic school of nursing, strengthen existing training programmes for nursing personnel, and improve nursing services.

Mongolia 0010 Cardiovascular Diseases (1967; 1969 - 1973) R

To study the epidemiology of cardiovascular conditions in order to determine further action.

Mongolia 0011 Cancer (1968 - 1973) R

To study the epidemiology of cancer, improve radiotherapy of the disease, and train personnel.

Mongolia 0013 Brucella Vaccine Production (1970 -) R

To produce freeze-dried Rev. I *Brucella* vaccine and establish laboratory facilities for its testing.

Mongolia 0015 Dental Health Services (1970 -) R

To develop dental health services, starting with services for schoolchildren, and to train dental personnel.

Mongolia 0200 Fellowships R: Hospital and medical services administration (four for nine months), obstetrics and gynaecology (six months), public health administration (three for one month, three for six weeks, one for two months, one for 10 months), social hygiene (six months), surgery (six months).

Nepal 0001 Malaria Eradication Programme (1954 -) R (AID)

To eradicate malaria.

Nepal 0002 Nursing Education and Services (1954 - 1976) UNDP/TA UNICEF

To establish in the Directorate of Health Services a Division of Nursing to co-ordinate nursing activities in the country; to set up a basic nursing school to prepare qualified nurse/midwives for health services; to organize courses for auxiliary nurse/midwives; to upgrade nursing services in Bir Hospital; to improve the clinical practice facilities for student nurses, and to develop public health nursing services, especially those used for the practical training of nursing and auxiliary nursing students.

Nepal 0003 Strengthening of Health Services (1955 -) UNDP/TA UNICEF

To develop effectively directed and supervised health services in which curative and preventive services are integrated at all levels and which are able to provide adequate technical guidance for field work and for the training of staff for the basic health services.

Nepal 0008 Maternal and Child Health Services (1963 - 1973) R UNICEF

To develop maternal and child health services, including family planning services, to establish referral facilities and to conduct refresher and orientation courses for nurses and medical personnel at all levels.

Nepal 0009 Smallpox Eradication and Control of other Communicable Diseases (1962 -) R Special Account for Smallpox Eradication UNICEF

To implement the national smallpox eradication programme and develop the communicable disease control unit in the Directorate of Health Services.

Nepal 0010 Health Laboratory Services (1967 - 1974) R UNICEF

To develop health laboratory services in order to improve diagnostic services and provide support for an epidemiological unit.

Nepal 0013 Leprosy Control (1967 -) R

To develop control services for leprosy in the Kathmandu valley and train health personnel.

Nepal 0014 Community Water Supply (1964 -) R UNICEF

To plan and co-ordinate the development of community water supplies.

Nepal 0016 Tuberculosis Control (1965 - 1974) R UNICEF

To plan and implement a community-oriented tuberculosis control programme, starting with BCG vaccination in the Kathmandu valley, as part of the basic health services, and to train the health personnel required for the purpose.

Nepal 0019 Health Education (1967 - 1974) R

To plan health education in the basic health services and in specialized projects and to strengthen the health education services.

Nepal 0021 Public Health Administration (1968; 1970 -) R

To strengthen the health services, starting with those in areas where the malaria eradication programme is expected to enter the maintenance phase.

Nepal 0025 Water Supply and Sewerage for Greater Kathmandu and Bhaktapur (1969 - 1972) UNDP/SF

To improve water supply and sewerage in Greater Kathmandu and Bhaktapur.

Nepal 0026 Strengthening of Epidemiological Services (1970 -) R

To establish an epidemiological unit in the Directorate of Health Services and train personnel in epidemiology.

Nepal 0200 Fellowships R: Health statistics (12 months), nursing (two for three months, two for 12 months), nursing education (two for 10 months, one for 12 months), paediatric nursing (four months), public health administration (12 months), public health nursing (two for 12 months).

Thailand 0002.2 Strengthening of Health Services (Integration of Specialized Programmes) (1964 - 1973) R UNDP/TA UNICEF

To integrate specialized programmes for the control of communicable diseases into the general health services and to develop the rural health services.

Thailand 0017.2 Mental Health Education and Services (1955 - 1959; 1963 - 1974) R

To develop mental health care within the framework of comprehensive health services, strengthen the teaching of psychiatry in the undergraduate medical curriculum and train all levels of mental health personnel, and organize a department of psychological medicine at Chiangmai University.

Thailand 0030 Leprosy Control (1955 - 1971) R UNICEF

To intensify the leprosy control programme and extend it to cover all endemic areas, and to train personnel.

Thailand 0038.2 School of Public Health, Bangkok (1966 - 1968; 1970 -) R

To improve the courses provided by the School of Public Health, Bangkok.

Thailand 0042 Tuberculosis Control (1958 -) R UNDP/TA UNICEF

To develop an integrated national tuberculosis control programme based on the experience gained in urban and rural pilot projects, and to train health personnel in tuberculosis control techniques recommended by WHO.

Thailand 0051 Hospital Administration (1968 -) R

To improve the administration of hospitals, and particularly of teaching hospitals.

Thailand 0057 Faculty of Tropical Medicine (1959; 1961 - 1964; 1967 - 1974) R

To strengthen the Faculty of Tropical Medicine, Mahidol University, Bangkok.

Thailand 0058.2 Paediatric and Obstetric Education and Services (1970) R

Five fellowships were awarded—one of two months in demography, one of three months in paediatric education, one of four months in practical care of the newborn, one of six months in preventive aspects of obstetrics and one of 12 months in maternal and child health.

Thailand 0059 Strengthening of Health Services (Epidemiology) (1966 -) R UNDP/TA

To organize and strengthen a national epidemiological service, undertake studies of specific health problems and train personnel.

Thailand 0065 Malaria Eradication Programme (1962 -) R (AID)

To eradicate malaria.

Thailand 0067 Radiation Protection Services (1963; 1965 - 1972) R

To establish a Division of Radiation Health Protection in the Ministry of Public Health, develop radiation protection measures and organize a radiation protection course.

Thailand 0069 Urban Public Health Administration (1969 -) R

To develop comprehensive urban health services and train personnel for work in urban communities, concentrating on the provision of a comprehensive maternal and child health service based on the general health services.

Thailand 0071 School for Medical Radiography, Bangkok (1965 - 1973) UNDP/TA

To train radiographers.

Thailand 0075 Strengthening of Laboratory Services (1968 - 1977) R

To develop a national health laboratory service.

Thailand 0079 Quality Control of Drugs (1970 - 1976) R

To strengthen legislation and laboratory competence in the quality control of pharmaceutical preparations and train drug analysts and drug inspectors.

Thailand 0081 Water Pollution (1966 -) R

To solve organizational and technical problems related to the prevention and control of water pollution.

Thailand 0082 Venereal Disease Control (1967 -) R

To organize a programme for the control of venereal diseases.

Thailand 0084 Goitre Control (1970 -) R

To carry out studies of iodine metabolism, including normal and abnormal thyroid metabolism, at the Siriraj Hospital, Bangkok.

Thailand 0086 Dental Health (1967 - 1975) R

To improve the education of professional and auxiliary dental staff, and to strengthen dental services.

Thailand 0087 Administrative Aspects of Health Services
(1968 -) R

To formulate and develop a programme for the reorganization of the internal administrative structure of the Ministry of Public Health, with emphasis on personnel and financial management, filing, record-keeping and archives, and programme planning, supervision and evaluation.

Thailand 0089 Nursing Education and Services
(1968 - 1975) R

To study nursing needs and resources, strengthen nursing services and education, develop university-level courses for nurses and organize and conduct studies related to nursing services and education.

Thailand 0090 National Community Water Supply
(1969 -) UNDP/TA UNICEF

To plan, organize and administer a national environmental health programme, including the extension of community water supplies, and to train personnel.

Thailand 0093 Medical Rehabilitation (1968 - 1977) R

To strengthen orthopaedic and rehabilitation services and continue training programmes in physical therapy.

Thailand 0095 Public Health Education (1968 - 1975) R

To develop various courses of study in the School of Public Health.

Thailand 0098 Health Planning and Administration
(1970 -) R

To improve health planning and administration. The project will include health manpower studies and the administrative aspects of health services previously covered by projects Thailand 0091 and Thailand 0087 respectively.

Thailand 0200 Fellowships R: Biochemistry of the thyroid hormones (12 months), epidemiology (three months), health education (eight months), hospital physics (12 months), nuclear medicine and radiography (12 months), nutrition and food sciences (12 months), nutritional anaemia (two years), obstetrics (four months), radiation therapy, nuclear medicine and radiobiology (12 months), radiography (12 months), radioisotope techniques in medicine (12 months), radiotherapeutics (12 months), reproduction biology (six months), social paediatrics (one week).

SEARO 0007 Regional Assessment Team on Malaria Eradication (1959 - 1961; 1963 -) R

To make an independent appraisal of the status of malaria eradication and of any special aspects of the eradication programme in countries of the Region.

SEARO 0030 Smallpox Eradication and Epidemiological Advisory Team (1962 -) R UNDP/TA

To assist the countries of the Region in the eradication of smallpox and in the development of epidemiological services.

SEARO 0030.2 Course in the Laboratory Diagnosis of Smallpox, Bandung (9 - 16 Feb. 1970) R

The purpose of the course, which was held at the Bio-Farma laboratories, Bandung, was to provide training in the laboratory diagnosis of smallpox in support of the smallpox surveillance

programme in countries of the Region. There were 14 participants from Ceylon, India, Indonesia, Nepal and Thailand.

WHO provided two consultants, two temporary advisers, the services of two staff members and secretarial assistance, and met the cost of attendance of the participants.

SEARO 0038.2 Production of Freeze-dried Smallpox Vaccine (1967 - 1974) R

To assist countries of the Region with the production of freeze-dried smallpox vaccine and with the establishment of laboratory facilities for its testing.

SEARO 0042.2 Radiation Protection (1968 - 1974) R

To train personnel concerned with the operation of X-ray apparatus in improved measures for guarding against the harmful effects of ionizing radiation.

SEARO 0050 Reorganization of Rural Health Records and Reports (1961 - 1974) R

To organize a system of rural health service records and reports in selected rural health centres and train personnel in the collection, processing and presentation of vital and health statistics at the rural health centre level.

SEARO 0064 Development of Community Water Supply Programme (1965 -) R

To assist countries of the Region in developing their urban and rural community water supply projects.

SEARO 0094.2 External Cross-checking of Blood Films (1968 - 1977) R

To develop and strengthen facilities in the countries of the Region for independent cross-checking of blood films from malaria eradication programmes.

SEARO 0096.2 Medical Education (1969 -) UNDP/TA

To assist in developing medical education at all levels and adjusting teaching and training programmes to the needs of the countries of the Region and the progress of medical science, train medical educators and promote inter-country exchange of experience in educational matters.

SEARO 0097 Nutrition Training and Advisory Services (1963 -) R UNICEF

To assist with training in nutrition and to support the National Institute of Nutrition, Hyderabad, India, in the carrying-out of its training programme.

SEARO 0102 Asian Institute for Economic Development and Planning (1964 - 1974) R (ECAFE)

To strengthen the faculty of the Asian Institute for Economic Development and Planning, established with the help of the United Nations Development Programme (Special Fund component) and UNICEF, and to assist with the training in health aspects of planning and public health administration.

SEARO 0104 Planning and Design of Hospitals and Health Centres (1968 -) R

To assist in the planning and designing of hospitals and health centres, in the co-ordination of medical care with preventive services and with training in hospital administration.

SEARO 0113 Regional Tuberculosis Training and Evaluation Team (1967 - 1977) R

To provide training in the operations and techniques of national tuberculosis control; assist in the operational assessment and evaluation of integrated national tuberculosis control programmes in the Region; assist in operational research required to develop and improve a pertinent assessment methodology; and provide practical assistance to national tuberculosis programmes as required.

SEARO 0117 Diphtheria/Pertussis/Tetanus Vaccine Production (1968; 1970 - 1977) R UNICEF

To assist in the production of diphtheria/pertussis/tetanus vaccine in countries of the Region.

SEARO 0123 Malaria Advisory Services (1969 - 1970) R

To assist with the planning and organization of all operational aspects of malaria eradication programmes in the Region, and with their evaluation.

SEARO 0128 Infectious-disease Hospitals (1968 - 1977) R

To assist governments in improving infectious-disease hospitals so that they provide adequate facilities for the diagnosis and treatment of infectious diseases, as well as training in that field.

SEARO 0130 Development of Health Education (1967 -) R

To arrange workshops and other educational meetings for national leaders in health administration and health education and other key personnel, for the study of subjects such as the training in health education given to various kinds of health workers, health education in the curricula for medical students, school health education and teacher training, and methods of curriculum development. Also, to conduct a study of field training practices.

SEARO 0132 Seminar on Water Pollution Control, Bangkok (4 - 14 Nov. 1970) R

The purpose of the seminar was to review the nature and extent of water pollution in countries of the Region and measures taken or planned for its control. The discussions covered the technical, administrative and legislative aspects of the subject, and also sources of technical assistance. There were 13 participants from Ceylon, India, Indonesia, Nepal and Thailand.

WHO provided two consultants and the services of two staff members, and met the cost of attendance of the participants.

SEARO 0133 Strengthening of Medical Education (1967 - 1969) R

The aim was to strengthen certain departments of medical colleges and introduce modern teaching methods. WHO provided consultants to Ceylon, India, Indonesia and Thailand. In addition, seminars on the teaching of pathology and clinico-pathological co-ordination were organized—two in India, three in Indonesia and one in Thailand—with participants from these three countries and from Afghanistan, Burma and Ceylon, and a seminar on the place of psychiatry in medical education was held in India in March 1968 with participants from Afghanistan, Ceylon, India, Indonesia and Thailand.

SEARO 0138.3 Seminar on Leprosy Control, Aska, India (12 - 31 Jan. 1970) R

The purpose of the seminar—the third on leprosy control organized in the Region—was to acquaint medical officers

engaged in leprosy control work with recent developments in the epidemiological and immunological aspects of the disease, in methodology of control and assessment and in procedures for the integration of leprosy control into the general health services. There were 19 participants from Burma, Ceylon, India, Indonesia, Nepal and Thailand and an observer from outside the Region.

WHO provided a temporary adviser and the services of staff members, and met the cost of attendance of the participants.

SEARO 0139 Short Courses for Nursing Personnel (1967 -) R

To assist in conducting short courses for nursing and other personnel of the health team in order to acquaint them with new concepts and skills, and in preparing teaching and reference materials that will help countries of the Region in developing their own educational programmes; and to identify and develop studies in nursing services and education. (See page 145.)

SEARO 0144 Rehydration Therapy (1967; 1970 - 1974) R

To assist countries in producing sufficient rehydration fluid for their needs and in establishing rehydration centres, first, in children's hospitals and subsequently at the peripheral level; and to organize courses for relevant categories of health personnel.

SEARO 0146 Regional Epidemiological Surveillance Team (1966 -) R

To assist governments in epidemiological investigations and control of outbreaks of enteric infections, including cholera, and with short training and demonstration courses on the subject.

SEARO 0148 Strengthening and Development of Health Services (1970 -) R

To assist in analysing the work of the community health services in the Region; to identify areas in which operational studies can be conducted, participate in their design, conduct and evaluation, and co-ordinate all such studies being implemented through the Regional Office; to assist in developing plans of operation and their plans of action so as to provide for better project and programme evaluation and follow-up; and to assess the overall efficiency and impact of WHO's assistance in the Region.

SEARO 0150 Education and Training in Sanitary Engineering (1970 -) R

To assist countries in the Region in training sanitary and civil engineers in specific aspects of environmental health requiring urgent attention, including problems of solid wastes.

SEARO 0153 Training in Immunology (1969 -) R

To review progress in immunology, particularly as related to communicable diseases, and to strengthen training in the subject.

SEARO 0159 Health Laboratory Services (1970 -) R

To review the progress achieved in the reorganization of national health laboratory services and their administrative and technical operation and management; to determine how methods, equipment, teaching, recording and reporting may be standardized, in order to formulate guidelines for co-ordination with recipient services such as epidemiological and health services; and to assist in the training of laboratory personnel.

SEARO 0160 Nursing Studies (June 1969 - April 1970) R

A consultant was provided to assist with the long-range planning and design of a study of the work of nursing personnel (graduate nurses, practical nurses, nurse-aides and nursing students) assigned to 10 hospitals under the Department of Medical Services, Thailand. The WHO nursing adviser attached to project Thailand 0089 also helped with the study, the preliminary planning for which was carried out by a WHO staff member.

The consultant also assisted with the sessions on programme, budget systems and cost analysis at the first regional course on national health planning held at the Asian Institute for Economic Development and Planning, Bangkok.

SEARO 0161 Hospital Statistics and Medical Records (1969 - 1974) R

To assist governments of the Region (i) in organizing an efficient system for the maintenance and flow of records in hospitals, (ii) in the collection, processing and presentation of hospital statistical data and (iii) in training medical records and hospital statistics personnel.

SEARO 0163 Course for Senior Teachers of Child Health (1970 -) R

To supplement assistance provided for the UNICEF-sponsored course for senior teachers of child health.

SEARO 0168 Training in Veterinary Public Health (1968 -) R

To assist in setting up postgraduate training in veterinary public health. (See page 144.)

SEARO 0168.1 Seminar on Veterinary Public Health, Mukteswar-Kumaon, India (8 - 18 April 1970) R

The objectives of the seminar, which was held at the Indian Veterinary Research Institute, Mukteswar-Kumaon, were to stimulate the establishment of veterinary public health services in the countries of the Region and identify areas in which joint activities by public health and veterinary workers are required in order to secure recognition of the need for training in veterinary public health. There were 22 participants from Ceylon, India, Indonesia, Mongolia, Nepal and Thailand; nine observers from India and a representative of FAO also attended.

WHO provided three consultants, three temporary advisers and the services of two staff members, and met the cost of attendance of the participants.

SEARO 0169 Port Health (1969 -) R

To assist in strengthening port health services.

SEARO 0170 Short Courses in Neonatology (1970 -) R

To organize short courses on modern practice in neonatology for paediatricians teaching in medical schools.

SEARO 0171 Maternal and Child Health Aspects of Medical Education (1970 -) R

To assist in strengthening the links between departments of social and preventive medicine, obstetrics and gynaecology and paediatrics, and in the development of joint comprehensive maternal and child health field training programmes within the existing curricula through organization of workshops for members of these departments.

SEARO 0172 Mental Health (1970 - 1977) R

To organize seminars on various aspects of mental health and to train personnel.

SEARO 0173 Integration of Maternal and Child Health Services into General Health Services (1970) R

The aim was to assess the situation regarding comprehensive health care for mothers and children in the Region on the basis of the experience gained in the implementation of recommendations emanating from the technical discussions on maternal and child health with particular reference to integration into general health services, held during the twentieth session of the Regional Committee for South-East Asia in 1967.

A regional seminar on integration of maternal and child health services into general health services was held in the Regional Office from 2 to 7 February 1970 to assess the situation regarding comprehensive health care for mothers and children and formulate plans for further development. The 17 participants, who came from Ceylon, India, Indonesia, Mongolia, Nepal and Thailand, included senior personnel at the national level concerned with maternal and child health and nursing. Three WHO consultants and several staff members assisted with the seminar, which reaffirmed the need for the planning, organization and management of maternal and child health services within the framework of the general health services.

Between May and August 1970 a consultant was assigned to the Regional Office to make plans for setting up a regional centre to provide documentation on all aspects of human reproduction, family planning and population dynamics. On 30 and 31 July a meeting of representatives of various institutions and agencies that are collecting such documentation was held, in order to co-ordinate efforts and avoid duplication.

SEARO 0174 Rehabilitation of Handicapped Children (1968; 1970) R

A consultant was provided between October and December 1968 to study the situation with regard to handicapped children in Afghanistan, Burma, India, Indonesia and Thailand. He made recommendations concerning measures to improve the programmes for the health care of handicapped children and concerning aspects of the problem requiring further study.

Between April and June 1970 the same consultant visited Ceylon, to make a study of the rehabilitation facilities available, and Thailand, to prepare a plan for the establishment of a centre for physically handicapped children in Bangkok.

SEARO 0175 School Health (1969 -) R

To study the pattern of school health services in the Region.

SEARO 0176 Courses on Health Laboratory Techniques (1969 -) R

To demonstrate the use of the fluorescent antibody technique in the diagnosis of rabies and to conduct courses in health laboratory techniques.

SEARO 0178 National Health Planning and Manpower Studies (1969 -) UNDP/TA

To promote the development of national health services in the countries of the Region by (i) formulating and evaluating national health plans; (ii) training national health personnel; (iii) organizing meetings and study groups; and (iv) conducting operational and manpower studies.

SEARO 0190 Control of Pesticides (1970 - 1972) R

To carry out an assessment of the problems surrounding the importation, storage, transport, handling, labelling and sale of pesticides in the countries of the Region and recommend measures for preventing or reducing hazards to man arising from the use of pesticides; to assist in the preparation of suitable legislation and advise on the establishment of laboratory competence in this field; and to develop studies for investigating the problem in depth.

SEARO 0192 Regional Team on Family Health
(1970 - 1972) UNFPA

To support national and international activities concerned with family health services and with training and research in the subject.

SEARO 0194 WHO-sponsored Training Centre for Nurses, Wellington, New Zealand (1970 -) R

To provide a training programme for nurses from the Region who cannot obtain admission to regular post-basic courses because of lack of the secondary education and/or the language skills required.

SEARO 0198 Regional Documentation Centre: Human Reproduction, Family Planning and Population Dynamics
(1970 - 1972) UNFPA

To establish a regional centre for basic literature on aspects of human reproduction, family planning and population dynamics, for the use of countries of the Region.

SEARO 0211 Public Health Advisory Services, Mekong Committee (1968 -) R

To assist in implementing the general recommendations in the summary report on the health survey in the Lower Mekong Basin adopted by the Committee for the Co-ordination of Investigations of the Lower Mekong Basin; to advise on the health protection of the labour forces engaged in the Committee's projects; to assess the health implications of such projects and make recommendations on measures for disease prevention and on the organization of basic health services in new development areas; to assist the Mekong Committee secretariat in making estimates of the cost of such services for inclusion in the overall cost estimates of construction projects; to study the pattern of environmental factors in relation to health; to make recommendations on measures to prevent the spread of water-borne diseases in the development areas, and to advise the WHO staff who are assisting the governments in the four riparian countries to plan and develop general health services in areas covered by Mekong Committee projects.

EUROPEAN REGION

Albania 0005 Cancer Control (1962 -) UNDP/TA

To develop a specialized cancer programme by building up a central institute with up-to-date equipment, and by training physicians, physicists and engineers for the medical and technical aspects of the programme.

Albania 0006 Vaccine Production (1966 -) R

To develop adequate facilities for the production of the vaccines and sera necessary for preventing and controlling communicable diseases.

Albania 0007 Central Institute of Epidemiology, Microbiology and Immunology (1965 -) UNDP/TA

To develop and expand epidemiological studies on communicable diseases and specialized training for various categories of personnel.

Albania 0008 Resuscitation Centre (1967 -) UNDP/TA

To establish a centre to strengthen the organization of resuscitation and casualty services and to train the necessary staff.

Albania 0200 Fellowships R: Artificial respiration (one for five weeks, one for six months), cardiology (three for six months), neurology (two for six months), oncology (one for one month, one for three months), radiology (one for three months, one for five months).

Algeria 0001 Communicable Eye Disease Control (1956 - 1969) R UNDP/TA UNICEF

The object was to carry out a programme for the control of communicable eye diseases. WHO provided an ophthalmologist from 1963 to 1969 and a consultant for two weeks in 1969 to advise the Institute of Trachoma and Ophthalmology of the University of Algeria on virological research. Six fellowships were awarded. UNICEF provided supplies, and bilateral aid was given by several organizations in Norway, Sweden and the United States of America.

The programme, which was preceded by an epidemiological study of trachoma, included a self-treatment mass campaign, the organization of collective treatment in schools, the control of trachoma and related diseases in the family environment, health education, and the training of technical personnel. The programme was directed mainly to the population of the Saharan departments and the rural population of the six departments bordering on the Sahara—about four million persons in all. In the 4200 primary schools, about 750 000 children were given regular treatment with antibiotics and surgical treatment of trichiasis was carried out.

In most communes there was a marked reduction in trachoma prevalence. Some control studies showed a rate of cure of 85 per cent. After two consecutive years of treatment at school the average rate of cure among children was 75 per cent. The percentage of serious cases fell from 18 to 7.3 and the average percentage of active trachoma from 30 to 12.

Algeria 0010 National Water Authority (1963 -) UNDP/TA UNDP/SF

To set up a national water authority responsible for planning and implementing a water development investment programme, carry out pre-investment studies and train personnel.

Algeria 0014 Nursing Education (1963 - 1969) UNDP/TA UNICEF

The aim was to organize and develop nursing education programmes at basic and post-basic levels and to promote programmes for training auxiliary nursing personnel. WHO provided three nursing advisers for a total of 97 months and a fellowship.

The nursing advisers assisted with the supervision of schools of nursing, the revision of existing training programmes and the establishment of new ones, the organization of national seminars, the orientation of teaching staff and the preparation of new teachers in urban and rural areas. They also took part in studies of nursing education resources.

Between 1964 and 1968 a total of 2344 nurses graduated from the nursing education centres in Algiers, Constantine and Oran and 184 teachers received training in informal courses and field programmes. Besides the nursing education centres, there are 16 schools of nursing in Algeria; in 1968 these were decentralized to district level and given independent budget allocations. At the same time a new curriculum for professional education in nursing was planned in which a large place was given to preventive medicine and public health nursing. By 1969, 160 students had received field training in public health nursing at the demonstration area established in El Madania by the National Institute of Public Health and 40 graduate nurses and a large number of auxiliary personnel had attended the in-service training programmes promoted by the El Madania public health centre.

While the project was in operation approval was given to a statute for nursing, midwifery and paramedical personnel which also established the duration of courses and admission requirements.

Algeria 0017 Mental Health Services (1969 -) R

To provide training for medical and nursing personnel in connexion with the reorganization of the mental health services.

Algeria 0022 Malaria Eradication Training Centre (1968 - 1969) R

The aim was to establish, in the National Institute of Public Health, a centre to train personnel for the malaria eradication programme. WHO provided a malariologist and a sanitarian who took part in the teaching at the centre, together with staff assigned to the malaria eradication project (Algeria 0508) and staff of the Central Bureau of Malaria Eradication. Fellowships and supplies and equipment were also provided.

Four courses were given—a four-week course for microscopists and a 13-week course for district supervisors in 1968, and two courses (one of 12 weeks and one of six weeks) for area supervisors in 1969. Six microscopists, eight district supervisors

and 19 area supervisors successfully completed the courses and were given employment in the district malaria services.

Training is continuing under the malaria eradication project Algeria 0508.

Algeria 0023 Natural Resource Surveys, Agricultural Experimentation and Demonstration in the Hodna Region, Central Algeria (1968 - 1970) UNDP/SF (FAO)

A consultant was provided in 1968 and 1970 to advise on the environmental sanitation aspects of this project, which is assisted by the United Nations Development Programme (Special Fund component) and for which FAO is the executing agency.

Algeria 0026 Planning and Organization of Human Resources (July 1969 - June 1970) UNDP/SF (ILO)

A medical officer was provided to assist with the health aspects of the project for the planning and organization of human resources, which was carried out with assistance from the United Nations Development Programme (Special Fund component) and for which ILO was the executing agency.

Algeria 0027 National Institute of Public Health (Dec. 1969) UNDP/SF

Three consultants were provided for one week to help the Government in formulating a plan for development of the National Institute of Public Health and in preparing a request for assistance to the Special Fund component of the United Nations Development Programme.

Algeria 0200 Fellowships R: Nursing (one for 14 weeks, one for five months, one for six months), nursing education (two months), nutrition (six months), physical therapy (three months), public health (one for three months, one for 12 months), rehabilitation (six weeks).

Algeria 0500 Development of Public Health Services (1963 -) R UNICEF

To plan and organize public health services, with emphasis on extending and improving the basic health services, on training public health personnel at the National Institute of Health and the schools for health personnel, and on some specialized activities such as nursing education and mental health services.

Algeria 0501 Public Health Administration (1963 -) R

To plan and organize public health services, co-ordinate specialized activities and integrate them into the public health services and train public health personnel.

Algeria 0502 Environmental Sanitation (1963 -) R UNICEF

To develop and strengthen environmental health services and train sanitation personnel.

Algeria 0504 Health Education (1963 - 1969) UNDP/TA UNICEF

The aim was to organize health education services, train personnel and implement specific health education activities, the long term objective being to secure the participation of the population in all measures for safeguarding and improving health and to integrate health education into all programmes directly or indirectly concerned with health. WHO provided a health education adviser from September 1964 to December 1969, consultants and (under other projects) two fellowships.

Health education work was organized mainly by mobile teams attached to the departmental directorates of health and by

the health education section of the National Institute of Health. The first task was to train personnel capable of developing health education at the national, departmental and local levels and to include special courses in health education in the training of health workers. Special attention was given to carrying out mass health education work in the east of the country, in order to facilitate the launching of the malaria eradication campaign, but a great deal was done elsewhere, particularly as regards education in environmental health. A large quantity of health education material was prepared and distributed and in some provinces more than 1000 volunteers took part in mass health education schemes.

The project was terminated at the end of 1969 since the national authorities were by then in a position to continue the work without WHO assistance.

Algeria 0505 Nutrition Advisory Services (1963 -) R UNICEF

To conduct nutrition surveys, review programmes for the prevention of malnutrition and train personnel.

Algeria 0506 Epidemiology and Health Statistics (1963 -) UNDP/TA

To organize health statistical services and train national personnel in health statistics; to use the statistical data collected for determining priorities in public health planning.

Algeria 0507 Nursing Advisory Services (1964 - 1969) UNDP/TA

The aim was to strengthen nursing administration, improve the quality of nursing services and developing nursing education programmes. WHO provided a nursing adviser for the duration of the project.

The project was linked with the nursing education project Algeria 0014 (see above). Much of the work was carried out in the demonstration area in El Madania, which provided in-service training for professional and auxiliary nursing and midwifery personnel from Algiers, Constantine and Oran and field experience for nursing and midwifery students from the three cities. Public health nursing services were developed in the Annaba district and in the Department of Saoura; health personnel were trained, the organization and administration of services were strengthened and in-service training programmes were organized. In all areas where the project was in operation constant efforts were made to co-ordinate measures for the prevention of disease with the curative work of the hospitals. Manuals and guides for nursing services, in-service training programmes, seminars, etc., were prepared, as well as documentation on the organization and administration of public health nursing services for use at national, departmental and district levels, and on the administration of health personnel and their education and training. Statistics on nursing and midwifery personnel in public health services were collected for a national survey of health needs and resources.

Algeria 0508 Malaria Eradication Programme (1968 -) R

To eradicate malaria progressively from the whole country. Also, to provide training facilities for staff engaged in malaria eradication work in Algeria and neighbouring countries. This follows the pre-eradication project which began in 1964.

Algeria 0509 Public Health Laboratories (1968 -) UNDP/TA

To organize laboratory services at various levels of the health administration and train laboratory staff.

Algeria 0510 Family Protection
(1963 -) UNDP/TA UNICEF

To reorganize and extend maternal, child and family health work in health centres throughout the country, and to develop training facilities for maternal and child health workers and related personnel.

Algeria 0513 Education of Health Personnel (1970 -) R

To improve the training programme for all categories of health personnel.

This project is a reorientation of project Algeria 0015, assisted by WHO between 1965 and 1969.

Austria 0015 Nursing Education and Administration
(1968; 1970 -) R

A 10-week fellowship was awarded in 1970 for the study of nursing education.

Austria 0200 Fellowships R: Air pollution (two for two weeks, one for three weeks), bacteriology (two weeks), drug control (two weeks), insecticides toxicology (two weeks), mycology (two weeks), public health administration (five for three weeks, one for six weeks), radioactive waste disposal (two weeks), vaccine preparation (two weeks).

Belgium 0200 Fellowships R: Air pollution (one month), hospital administration and organization of medical care (two months), industrial hygiene (five months), medical sociology (one for two weeks, one for three weeks), public health administration (two months), rickettsioses (three months).

Bulgaria 0012 Central Institute of Public Health, Sofia
(1968 -) UNDP/SF

To establish a central technical and scientific body grouping a number of formerly independent specialized institutions. The functions of the Institute will be to collect, process and evaluate information as a basis for planning the development of health services; and to train medical and paramedical personnel and carry out research as a faculty of the postgraduate medical school.

Bulgaria 0017 Mechanical and Pneumatic Aeration Units for Waste-water Treatment (1970) UNDP/TA

A three-month fellowship was awarded for study of this subject.

Bulgaria 0021 Immuno-depressive Action and Toxicology of Pesticides (1970) UNDP/TA

A fellowship awarded in 1969 was extended by six months.

Bulgaria 0022 Problems of Water and Waste Treatment
(1970) UNDP/TA

One two-month and two three-month fellowships were awarded.

Bulgaria 0200 Fellowships R: Andrology (two months), cardiac surgery (one month), clinical psychology (two for two months), electron microscopy (one for one month, one for three months), encephalography (two months), endocrinology (two months), mental health (three months), neurosurgery (two months), occupational health (two months), ophthalmology (two for two months), sanitary engineering (11 months), thoracic surgery (two months).

Bulgaria 0201 Fellowships UNDP/TA: Biochemistry (one for five months, one for six months), drug testing (four months), industrial hygiene (one for three months, one for four months), paediatric hospitals (four months), town planning (four months).

Czechoslovakia 0009 Medical Training Institutes (1960 -) R

To develop undergraduate and postgraduate programmes in medicine in national institutions.

Czechoslovakia 0011 Centre for Environmental Pollution Control
(1969 -) UNDP/SF

To establish a federal research and development centre for environmental pollution control.

Czechoslovakia 0200 Fellowships R: Bacteriology (one month), cardiology (one month), electro-encephalography (two weeks), environmental health (one month), hospital pharmacy (one month), medical care administration (six weeks), occupational health (one month), orthopaedic surgery and traumatology (two weeks), pertussis vaccine (one month), public health administration (five weeks), radiation health (two months), traumatic surgery (six weeks), vascular surgery (one for one month, one for two months).

Denmark 0200 Fellowships R: Hospital planning two for two weeks, medical electronics (one for one month, one for two months), mental health (two months).

Finland 0200 Fellowships R: Communicable diseases (three weeks), gerontology (two months), health education (one month), mycology and laboratory diagnostic methods (one month), psychiatry (one month), public health administration (one month), radiation protection (two for one month), rehabilitation of epilepsy patients (one month), sanitary engineering (12 months), virology (three weeks).

France 0200 Fellowships R: Child psychiatry (one month), hospital administration (two for one month), lung transplantation (six weeks), public health administration (one for two weeks, one for one month), public health training (one month), reanimation services (three weeks), rehabilitation of handicapped children (one month), venereal diseases (two weeks), virology (one for three weeks, one for six months).

Germany 0200 Fellowships R: Child psychoanalysis (12 months), environmental sanitation (three months), nautical medicine (two for one month), public health administration and tuberculosis control (one month), radiation protection (three weeks), radiology (six months), social medicine (six months).

Greece 0017 Nursing Education and Administration
(1956 - 1962; 1970) UNDP/TA

To train nurses abroad for teaching and administrative posts in a post-basic school of nursing which is to be established to prepare tutors and administrators for nursing education programmes and services.

Greece 0020 Mental Health Services (1968 - 1969) R

WHO staff advised on the development of mental health services and on the integration of mental health work with public health practice. In addition, a four-month fellowship was awarded for study of neuropsychiatry.

Assistance is mental health will continue under the project for the development of public health services and training of personnel (Greece 0025).

Greece 0025 Development of Public Health Services and Training of Personnel (1958 -) UNDP/TA UNICEF

To organize comprehensive and co-ordinated health services in a rural area where new methods of public health administration can be tested, practical training can be given to all categories of

public health personnel, and demonstration and research can be carried out. Services for vital and health statistics, maternal and child health, dental health, medical care, mental health and environmental health are being organized in the demonstration area.

Greece 0035 Waste Disposal (1967 -) UNDP/TA

To assess solid waste disposal problems in urban areas through a general review, followed by a specific study of one or two cities where the situation is more acute.

Greece 0036 Public Health Laboratory Services (1967 -) UNDP/TA

To modernize and expand the central laboratory services and improve the regional and peripheral services in accordance with recommendations contained in the study made by a WHO consultant in 1965.

Greece 0038 Hospital Regionalization (1969) UNDP/TA

A consultant assisted the Ministry of Social Services in the preparation of a plan for the regionalization of hospital services as a first step towards a more extensive plan for the establishment of a national health and social security policy.

Greece 0200 Fellowships R: Angiography (four months), cancer chemotherapy (one for three months, one for eight months), cardiovascular diseases (four months), human genetics (nine months), virology (six months).

Hungary 0007 Medical Training Institutes (1966 -) R

To develop new medical teaching programmes in certain medical schools.

Hungary 0010 Nursing and Midwifery Education and Administration (1966 - 1969) UNDP/TA

The aim was to assist in the development of nursing and midwifery education programmes and in establishing a post-basic school to prepare nurses and midwives for administrative and teaching posts in schools of nursing, hospitals and public health nursing and midwifery services. WHO awarded seven fellowships in nursing education (one for three weeks, two for six weeks and four for three months) and a two-year fellowship to study the administration of schools of nursing. In addition, some educational equipment was provided.

Hungary 0013 Health Statistics (1965 - 1969) UNDP/TA

The aim was to establish a national centre for health statistics. WHO provided six fellowships (five in medical statistics and epidemiology and one in medical care planning and administration) and supplies and equipment. In 1969, a consultant advised the Government on computer facilities for the health services.

Hungary 0020 Treatment of Tropical Diseases (1970) UNDP/TA

To provide facilities for training in the treatment of tropical diseases.

Hungary 0200 Fellowships R: Cardiac surgery (one for two months, one for six months), endocrinology and gastro-enterology (three months), human cytogenetics (two months), nephrology (three months), occupational health (one for six weeks, one for three months), renal transplantation (six months), transplantation immunology (one for three months, one for six months).

Hungary 0201 Fellowships UNDP/TA: Environmental health (six months), waste water treatment (four for two months), water management (two for two months), water pollution control (two for two months), water quality protection (two months), water supply and treatment (three for two months).

Iceland 0200 Fellowships R: Psychiatric social work (nine months), public health (five months).

Ireland 0200 Fellowships R: Child health services (three for one month), dental health (one month), geriatrics (one month), health education (one month), hospital planning and administration (one month), medical education (two weeks), mental health (four for one month), thoracic surgery (one month).

Italy 0023 Nursing Education and Administration (1960 -) R

To prepare nurses for teaching and administrative posts and develop basic and post-basic nursing education programmes.

Italy 0200 Fellowships R: Computer use in medicine (one month), food additives control (one month), geriatrics and gerontology (three weeks), haematology (one month), health legislation (one month), hospital techniques (one month), intensive care of cardiovascular patients (two for one month), mental health (two one month), nursing (three weeks), ophthalmology (one month), organization of psychotherapy services (one month), paediatrics (one month), psychiatry (one month), rehabilitation (six weeks), speech therapy (six months).

Luxembourg 0200 Fellowships R: Clinical chemistry (three months).

Malta 0007 Mental Health Services (1965 -) UNDP/TA

To plan and develop the psychiatric services, and especially the training of nursing personnel.

Malta 0014 Waste Disposal and Water Supply (1966 -) UNDP/SF

To carry out engineering and feasibility studies and draw up a construction and investment programme for immediate and phased long-term plans for the improvement and development of waste disposal and water supply facilities; also to investigate the legal, managerial and financial aspects of the programme.

Malta 0200 Fellowships R: Dental health (12 months), psychiatry (six months).

Morocco 0023 Medical Education (1960 -) R

To strengthen teaching and research in preventive and social medicine and in the basic medical sciences at the Faculty of Medicine, Rabat, and to train national staff.

Morocco 0037 Training of Sanitary Engineers (1968 -) R

To train sanitary engineering teaching personnel and specialists at university level.

Morocco 0038 Surveillance and Control of Communicable Diseases (1970 -) R

To assess the extent of the communicable diseases which are major public health problems in the country, especially salmonellosis, venereal diseases, cerebrospinal meningitis and leprosy, with a view to implementing effective and economical measures.

Morocco 0040 Water Supply and Related Studies, Phase II
(1969 -) UNDP/SF

To prepare a master plan for national and regional water supplies, and pre-investment studies on water supply and waste disposal in the coastal region between Kenitra and Casablanca and on water supply for one or two towns in the remainder of the country. The project includes economic and organizational studies as well as the training of personnel.

Morocco 0200 Fellowships R: Biology and biochemistry (eight months), environmental sanitation (four for one month), malaria (two for two weeks, two for seven weeks), paediatrics (two months).

Morocco 0504 Nursing Services and Education
(1967 -) UNDP/TA

To develop nursing education and administration, public health nursing and hospital nursing services, at national and local levels.

Morocco 0507 Environmental Sanitation
(1958 -) UNDP/TA

To develop sanitary engineering services, promote environmental sanitation programmes and train sanitation personnel.

Morocco 0509 Communicable Eye Disease Control
(1952 -) UNDP/TA UNICEF

To continue the trachoma control programme which is being carried out in all rural areas through the public health services.

Morocco 0510 Malaria Pre-eradication Programme
(1962 -) R

To prepare for a malaria eradication programme by the organization of technical, administrative and operational services; and to train medical and paramedical personnel of public health services (especially rural health services) in malaria eradication concepts and techniques.

Netherlands 0015 Fellowships R: Air pollution (one month), child health (one month), cosmetics chemistry (five weeks), occupational health (one month), preventive medicine (two for one month), youth health services (one month), zoonoses epidemiology (six weeks).

Norway 0200 Fellowships R: Public health administration (two for four months, two for six months).

Poland 0015 Medical Faculties (1958 -) R

To provide assistance to certain medical schools, particularly in improving facilities for teaching the basic medical sciences.

Poland 0016 Tuberculosis Control
(1960 -) UNDP/TA UNICEF

To carry out tuberculosis control work and to follow up the results of the studies carried out since 1964 on the detection and treatment of new cases in pilot tuberculosis control areas. Studies on the epidemiology of tuberculosis in Poland and tests on the immunogenic value of BCG vaccine are also envisaged.

Poland 0026 Protection of River Waters against Pollution
(1965 -) UNDP/SF

To develop scientific and research work for the control of water pollution by domestic wastes, industrial effluents, saline waste waters and waste waters from thermal power stations in the Upper Silesia region.

Poland 0027 Mental Health (1967 -) UNDP/TA

To provide training in child mental health and the rehabilitation of psychiatric patients in order to strengthen the mental health services.

Poland 0030 Air Pollution in Coal Industry
(1969) UNDP/TA

A seven-month fellowship was awarded.

Poland 0031 Comprehensive Development of the Vistula River System (1970 -) UNDP/SF (UN)

Consultants on water pollution are being provided under this project, which is assisted by the United Nations Development Programme (Special Fund component) with the United Nations as the executing agency.

Poland 0200 Fellowships R: Antilymphocytic serum (five weeks), cardiography (three months), cardiology and nephrology (one for one month, one for two months), endocrinology (two months), environmental sanitation (one for six weeks, one for seven weeks), epidemiology of non-communicable diseases (six months), epidemiology and prophylaxis (six weeks), occupational health (one for one month, one for six weeks, one for seven weeks, and one for two months), ophthalmology and plastic surgery (one month), otolaryngology (one month), plastic surgery (one month), postgraduate medical education (one month), public health administration (one month), rehabilitation (six weeks), rehabilitation of children with motory defects (two months), shigella bacteriology (three months), social medicine (one for three months, one for seven months), vitamin biochemistry (three months).

Poland 0201 Fellowships UNDP/TA: Medical statistics and epidemiology (four months).

Romania 0005 Rehabilitation (1967 -) UNDP/TA

A two-month fellowship was awarded in 1970.

Romania 0006 Child Psychiatry (1970 -) R

To provide facilities for study abroad in order to assist the development of the psychiatric services for children.

Romania 0007 Education and Training of Health Personnel
(1970 -) R

To develop post-basic teaching institutions and prepare teachers for various groups of health personnel.

Romania 0008 Electronic Microscopy and Cytochemistry
(1969 -) UNDP/TA

Two three-month fellowships were awarded in 1970.

Romania 0009 Studies on Air and Water Pollution Control
(1969 -) UNDP/SF

To carry out laboratory and field studies on air and water pollution, develop control methods and train personnel.

Romania 0010 Orthoptics (1969 - 1970) UNDP/TA

The aim was to provide training in orthoptics and to advise on the organization of services for prevention and treatment of squint and amblyopia. Two three-month fellowships were awarded in 1969, and in 1970 a consultant advised on screening activities, health education and the training of specialized personnel.

Romania 0011 Maternal and Child Health Services
(1970 -) UNDP/TA

To provide training in maternal and child health.

Romania 0012 Transplantation of Tissues and Organs
(1970 -) UNDP/TA

To train doctors in the transplantation of tissues and organs.

Romania 0013 Emergency Assistance (1970) R

Technical advice was given on environmental sanitation problems following severe floods, and some equipment was provided.

Romania 0200 Fellowships R: Drug control (three months), haematology (two months), hospital administration (two months), maintenance and repair of medical equipment (three months), occupational health (two months), ophthalmology (three months), orthoptics (one month), paediatrics (two months), pharmacology (two months), prevention of prematurity (two months), public information in health services (three weeks), respiratory allergies (six months), statistical and epidemiological methods (one for three months, one for 14 weeks, one for four months), statistics and computer use (two for two months), tuberculosis epidemiology and control (14 weeks).

Spain 0012 Brucellosis Control
(1957 - 1958; 1965 - 1969) UNDP/TA

Following assistance in conducting epidemiological studies of brucellosis in goats, provided in 1957 and 1958, eight fellowships—six of two months and two of three months—in various aspects of brucellosis control work were awarded under this project.

Spain 0025 Epidemiological Studies of Virus Diseases of Public Health Importance (1964 -) UNDP/TA

To study methods for the prevention and control of enteric, respiratory and other virus diseases of public health importance and to provide training facilities.

Spain 0030 Health Demonstration and Training Area
(1965 -) UNDP/TA

To set up, as part of the general plan for socio-economic development, a public health demonstration and training area with a complete network of co-ordinated rural health services. The area will be used for testing administrative and technical methods, for carrying out surveys, and, in collaboration with the National School of Public Health, for training various categories of health staff.

Spain 0031 Mental Health Services (1966 -) UNDP/TA

To develop the mental health services, especially those for the rehabilitation of psychiatric patients.

Spain 0033 Hospital Administration (1969) UNDP/TA

Three temporary advisers assisted at three seminars, dealing with accidents, cost and efficiency of hospital care, and hospital architecture, respectively. Some equipment was also provided.

Spain 0200 Fellowships R: Air and water pollution control laboratory methods (one month), child mental health (two months), communicable tumours in animals (four months), food control (one month), food microbiology (three weeks), haematology (three months), immunology (one month), marine microbiology (one month), microbiology (one month), orthopaedics and rehabilitation (three months), parasitology (two months), rehabilitation (three months), sanitation in tourist areas (two for one month), virology (one month).

Sweden 0200 Fellowships R: Air pollution (seven weeks), child care (five weeks), drug dependence (one month), food hygiene (one month), health planning (two months), maternal

and child health (one month), oral surgery (one month), physical therapy (one month), psychiatric outpatient services (two weeks), public health nursing (one month), statistics (one for five weeks, one for 12 months).

Switzerland 0018 Study of the Functions of Nursing Personnel
(1965 -) R

To determine the responsibilities and differentiate the functions of the various categories of nursing personnel required by the health services. (See page 151.)

Switzerland 0200 Fellowships R: Child psychotherapy (four months), immunology (eight months), nephrology (three months), nursing training in children's hospitals (two months).

Turkey 0023 Malaria Eradication Programme
(1957 -) R UNICEF

To achieve malaria eradication throughout the country.

Turkey 0029 Nursing Education (1969 -) R

To develop nursing and midwifery education by training nurses for leading posts in specialized fields.

Turkey 0046 Master Plan for Water Supply and Sewerage for the Istanbul Region (1965 -) UNDP/SF

To prepare a master plan, and feasibility and preliminary engineering and other organizational studies for the extension and improvement of the water and storm drainage systems of Greater Istanbul and the rapidly developing industrial areas in the vicinity.

Turkey 0050 Training in Preventive and Social Medicine
(1969 -) R

To develop undergraduate and postgraduate medical education. The project provides for continuation of assistance to the School of Public Health, Ankara, and for assistance, chiefly in preventive and social medicine, to new medical schools.

Turkey 0051 Promotion of Training and Programmes in Sanitary Engineering, Middle East Technical University
(1970 -) UNDP/TA

To train environmental health personnel at professional and subprofessional levels at the Middle East Technical University, Ankara, and to promote specific environmental health programmes in various government agencies.

Turkey 0053 Promotion of Training and Programmes in Sanitary Engineering, Istanbul Technical University
(1970 -) UNDP/TA

To train environmental health personnel at professional and subprofessional levels at the Istanbul Technical University and to promote specific environmental health programmes in various government agencies.

Turkey 0200 Fellowships R: Allergies (three weeks), Rh antiserum production (two weeks), communicable diseases (six weeks), public health administration (five months).

Turkey 0201 Fellowships UNDP/TA: Dermatology (12 months).

Turkey 0503 Environmental Sanitation (1964 -) R

To develop the environmental sanitation services and train sanitation personnel.

Turkey 0508 Training of Public Health Laboratory Technicians
(1969 -) R

To train laboratory technicians required for the development of country-wide public health laboratory services and prepare an expanded teaching programme.

United Kingdom 0200 Fellowships R: Accident and resuscitation services (two for one month), community health services for children (two weeks), mental health (one month), nursing education (three for one month), serology (one month), smallpox and cholera (one month), virology of respiratory virus diseases (five weeks).

USSR 0200 Fellowships R: Biochemistry (two months), cancer (one month), cardiac surgery (two months), computer use in medicine (two for two months), diagnosis and treatment of tumours in children (six months), immunochemistry (11 weeks), laboratory techniques (12 months), parasitology (one month), psychopharmacology (three months).

Yugoslavia 0020 Public Health Administration
(1969 -) UNDP/TA

To provide training facilities and equipment for various categories of personnel of the federal and republic institutes of public health.

Fellowships were provided under this project between 1956 and 1968.

Yugoslavia 0037 Chronic and Degenerative Diseases
(1969 -) UNDP/TA

To provide training facilities and equipment for the chronic and degenerative disease centres to be set up in certain republics.

Fellowships were provided under this project between 1965 and 1967.

Yugoslavia 0038 Epidemiological Studies of Virus Diseases
(1965 -) UNDP/TA

To initiate serological surveys and isolate viruses from cases of active respiratory illness in children with a view to assessing the extent of the problem and evolving suitable control measures.

Yugoslavia 0047 Reconstruction of Banja Luka Urban Area
(1970) UNDP/TA

Three consultants were provided in May and again in September 1970 to assist the municipal authorities in dealing with problems of water supply and waste water disposal during the reconstruction of the town of Banja Luka following the earthquake which took place in October 1969.

Yugoslavia 0165 Trachoma Control and Prevention of Loss of Vision (1967 -) UNDP/TA

To continue the trachoma control programme; and to organize pilot schemes for early case-finding and treatment of ophthalmic conditions in infants and pre-school children, mass case-finding of other potentially blinding eye conditions in adults and elderly people, and preventive measures and accident prevention programmes as part of specialized health services.

Yugoslavia 0200 Fellowships R: Biochemistry and chemistry teaching (one month), biochemistry, physiology and dental health teaching (one month), cardiology (two months), cardiovascular surgery (one month), dental health (one for one month, two for two months, one for three months), gynaecological cancer (six weeks), housing and town planning (two weeks), immunology (two months), laboratory methods and teaching of anatomy (one month), oral surgery (two months), thoracic surgery (one month).

Yugoslavia 0201 Fellowships UNDP/TA: Paediatric nursing (two months), paediatrics (one month).

EURO 0135 Study on the Organizational Patterns of Occupational Health Services (1968 - 1970) R

To make a comparative study of organizational patterns of occupational health services in certain European countries, applying modern methods of analysing administrative organization. Particular attention will be paid to the impact of new industrial developments on the structure and functions of these services.

A working group was convened in Moscow from 27 to 30 May 1970. WHO provided the cost of attendance of nine participants (temporary advisers) from Czechoslovakia, Finland, France, Norway, Sweden and Union of Soviet Socialist Republics. A representative of ILO also attended.

EURO 0183 Participation in Seminars and Conferences
(1959 -) R

To assist with seminars and conferences conducted by the United Nations, specialized agencies, medico-social organizations and agencies whose work is of special interest to the Regional Office.

EURO 0184 Trachoma Control and Prevention of Loss of Vision (1958 -) UNDP/TA

To provide specialized technical advice on the further development of communicable eye disease control projects in several countries of the Region, and to study the need for general sight-saving programmes in these and other countries.

EURO 0185 Follow-up of Inter-country Activities on a National Basis (1958 -) R

To assist governments in developing national activities arising out of the inter-country programmes of the European Region.

EURO 0207 Undergraduate Education for the Health Professions (1961 -) R

To stimulate improvements in undergraduate medical teaching and particularly the introduction of preventive and social medicine at various stages and in various sections of the curriculum.

EURO 0211 Exchange of Information on Placement, Supervision and Follow-up of WHO Fellows (1968 -) R

To supervise the placement of trainees from the African Region for studies in countries of the European Region.

EURO 0215 Health Statistical Services (1962 -) R

To support and conduct studies on various subjects, including the accuracy and comparability of statistics on causes of death, the epidemiology of home accidents, methods of surveillance of congenital pathological conditions, the use of continuous population samples in health surveys, the use of social security records as sources of health statistical information, the measurement of the consumption of psychotropic drugs, and the linkage of child health records. This project is linked with projects EURO 0350 and EURO 5012 (see below).

EURO 0232 Malaria Eradication Evaluation and Epidemiological Assessment (1962 -) R

To meet requests for the certification of malaria eradication and to assist malaria epidemiological assessment within the Region.

EURO 0275 Preparatory Arrangements for Conferences
(1964 -) R

To make preparations and preliminary arrangements for conferences, seminars, etc., to be held in the following year.

EURO 0299 International Children's Centre Courses
(1965 -) R

Courses on Social Paediatrics, Paris

(i) 13 April - 1 May 1970: Fellowships for three trainees from Greece, Turkey and Yugoslavia.

(ii) 28 May - 17 June 1970: Fellowships for four trainees from Czechoslovakia, Hungary, Italy and Romania.

Course on Mother and Child Care, Paris

24 Sept. - 25 Nov. 1970: Fellowships for five trainees from Algeria, Bulgaria, Czechoslovakia, Morocco and Poland and, under another project, a fellowship for a second trainee from Algeria.

Course on Health and Social Aspects of Children of School Age, Teheran

16 Nov. - 6 Dec. 1970: A fellowship for a trainee from Turkey.

EURO 0302 Postgraduate Education in the Health Professions
(1965 -) R

To stimulate improvements in postgraduate medical training and to assist national efforts in this field, mainly by the provision of consultants, lecturers, fellowships and supplies to postgraduate training institutes, schools of public health and schools of tropical medicine. It is also planned to support some inter-country activities concerned with postgraduate training.

The project is a continuation, in a modified form, of project EURO 110 — European Schools and Training Centres in Public Health — which was completed in 1964.

EURO 0305 Consultant Services (1965 -) R

To meet requests — sometimes of an urgent nature — from countries in the Region for advice on subjects for which no specialized health officer is available and for which it may be impracticable to obtain assistance from headquarters staff.

EURO 0319 Entomological Services to North African Countries
(1965 -) R

To provide entomological advice for the malaria projects in Algeria and Morocco and, if necessary, for those in Turkey and other countries.

EURO 0321 Study of the Effectiveness of Tuberculosis Control Programmes (1966 - 1970) R

To assist governments in assessing the effectiveness of their tuberculosis control programmes. This long-term regional study, which follows the Technical Meeting on Tuberculosis Control held in Copenhagen in 1966, should make it possible to improve the accuracy, relevance and comparability of indices of national tuberculosis problems.

EURO 0328 Study of Methods for the Early Detection of Potentially Blinding Eye Conditions (1968 - 1972) R

To study possible methods of screening for potentially blinding eye conditions, and to obtain information as a basis for comparison of procedures and for discussion on the most suitable methods for European countries to adopt.

EURO 0330 Training Courses and National Studies in Health Education and Related Social Sciences (1970 -) R

To assist certain postgraduate courses for training health education specialists and to help countries interested in organizing national studies.

EURO 0331 National Courses, Conferences and Seminars in Health Education for Physicians and Leading Health Personnel
(1968 -) R

To assist national courses, conferences and seminars for physicians and leading health personnel responsible for promoting health education and to facilitate the attendance of similar staff from neighbouring countries by the award of fellowships.

EURO 0340 Study on the Role of Central Institutes of Hygiene or Public Health (1970) R

To study the organization of national and regional institutes of public health or hygiene conducting technical, educational or research activities in certain countries of the Region.

EURO 0342 Study on Advanced Nursing Education
(1968; 1970 -) R

To examine and evaluate nursing education programmes in Europe, and to define criteria and devise methods applicable to the assessment of such programmes.

EURO 0347 Courses on Air Pollution and Water Pollution
(1967 -) R

To promote, in national institutions, short courses on air and water pollution, with special reference to public health, to enable personnel from interested countries to bring their knowledge up to date and to acquaint them with new developments.

EURO 0350 Epidemiological Studies (1966 -) R

To study and report on specific aspects of mortality and morbidity of particular interest to the Region, starting with a study among cases of stomach cancer. If appropriate, the findings will be presented to the annual sessions of the Regional Committee for Europe. Also, to co-ordinate and assist limited inter-country studies on relevant epidemiological subjects. This project is linked with project EURO 0215 (see above).

EURO 0373 Postgraduate Training in Public Health
(1970 -) R

To assist schools of public health and other institutions responsible for postgraduate education in organizing basic, advanced and continuing education in public health and in promoting the use of effective educational methods.

EURO 0380 Conference on the Role of the Primary Physician in the Health Services, Noordwijk, Netherlands
(30 June - 4 July 1970) R

The purpose of the conference was to bring together physicians who have first contacts with patients (general practitioners, physicians working in polyclinics, etc.) to discuss with public health administrators their present and future functions in the light of the changing demands and needs of society and of patients. (See page 152.) There were 58 participants from Albania, Austria, Belgium, Bulgaria, Czechoslovakia, Federal Republic of Germany, Finland, France, Greece, Hungary, Ireland, Italy, Malta, Monaco, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Turkey, United Kingdom, and Yugoslavia.

WHO provided three consultants and seven temporary advisers, and met the cost of attendance of 27 participants.

EURO 0383 Study of the Treatment and Disposal of Radioactive Wastes (1967; 1969) R (IAEA)

The aim was to study, in collaboration with the International Atomic Energy Agency, the public health aspects of the treatment and disposal of municipal wastes into which radioactive material is discharged.

A meeting of experts carrying out the study and a representative of IAEA was held in Copenhagen from 17 to 19 October 1967. WHO provided two consultants and two temporary advisers (from France and Yugoslavia). The report on the study was prepared in 1969 in English, French and Russian and has been distributed.

The information collected will be used in the development of the regional long-term programme for environmental pollution control.

EURO 0386 Postgraduate Training in Social Paediatrics
(1968 -) R

To assist courses on the preventive and social aspects of paediatrics (for example, those complementing the courses organized by the International Children's Centre), and to provide certain teachers with recent information on problems specifically affecting the areas from which their students come.

EURO 0389 Seminar on Food Hygiene, Warsaw
(18 - 22 Aug. 1970) R

The purpose of the seminar was to examine the problem of salmonellosis and other bacterial, parasitic and virus diseases (including the problem of viral contamination of food and water) in relation to food intoxications still prevalent in many parts of the Region, and of major importance to the tourist trade and food conservation industry, and to consider requirements for food hygiene personnel at all levels and discuss ways of strengthening administrative and legal protective measures. (See page 151.) There were 36 participants from Albania, Algeria, Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Federal Republic of Germany, Finland, France, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Turkey, Union of Soviet Socialist Republics, United Kingdom, and Yugoslavia.

WHO provided four temporary advisers and met the cost of attendance of 30 participants.

EURO 0399 Meeting on Prevention, Treatment and Rehabilitation in Cerebrovascular Diseases, Monaco
(25 - 29 May 1970) R

The purpose of the meeting, which was arranged jointly with WHO headquarters, was to discuss modern methods of prevention and treatment of cerebrovascular diseases and rehabilitation of patients, and to suggest ways of improving the situation in this field. There were 22 participants from Belgium, Canada, Denmark, Federal Republic of Germany, Finland, France, Israel, Japan, Luxembourg, Malta, Monaco, Netherlands, Nigeria, Romania, Sweden, Singapore, United Kingdom, United States of America, Venezuela and Yugoslavia.

WHO met the cost of attendance of the participants.

EURO 0407 Advanced Training Course on Health Planning, Moscow (15 Oct. - 15 Dec. 1970) R

The purpose of the course, which was given in English, was to introduce methods of health planning within the framework of national economic development.

WHO provided eight lecturers and fellowships for 10 trainees from Denmark, Finland, Malta, Netherlands, Norway, Poland, Spain, Sweden, Turkey and United Kingdom. Three staff members also gave lectures.

EURO 0408.1 Follow-up Meeting of the Seminar on the Uses of Operational Research in Health Services, Copenhagen
(9 - 13 Feb. 1970) R

The aim of the meeting, which was convened in pursuance of the recommendations of the seminar on the uses of operational research in health services, held in Bucharest in 1969, was to

discuss the possibility of developing further operational research models for the solution of problems arising in the planning, administration and evaluation of health services.

WHO met the cost of attendance of the five participants (temporary advisers) from Austria, Denmark, Finland, France and United Kingdom.

EURO 0411 Study on the Teaching of Occupational Health and Safety (1969 - 1970) R (ILO)

To invite experienced teachers and administrators of occupational health services to make a critical appraisal of the need to train various types of personnel and of the way they should be taught.

EURO 0415 Study on Trends and Developments in Water Pollution Control in Europe (1969 - 1970) R

The purpose was to review the present situation in water pollution control in Europe and to consider trends and future activities for coping with the increasing problems in this field. A report on the study has been prepared and distributed to Member States.

Work begun under this study will be continued as part of the regional long-term programme for environmental pollution control.

EURO 0416 Technical Meeting on Tuberculosis Control in Rural Areas, Zagreb (29 Sept. - 1 Oct. 1970) R

The purpose of the meeting was to review aspects of tuberculosis control in rural areas in certain parts of the Region where regular surveillance is difficult owing to the dispersion of patients. There were 12 participants from Algeria, Austria, Belgium, Bulgaria, France, Greece, Morocco, Poland, Romania, Spain, Turkey and Yugoslavia. They had the opportunity of studying, in a rural area near Zagreb, the organization and implementation of tuberculosis control measures, integrated in the work of the general health services.

WHO provided two temporary advisers and met the cost of attendance of the participants.

EURO 0421 Seminar on Public Health Practice, Sofia
(24 Sept. - 8 Oct. 1970) R

The purpose of the seminar was to consider public health problems common to a group of countries. There were 21 participants — senior public health officers from Albania, Belgium, Bulgaria, Czechoslovakia, France, Greece, Hungary, Italy, Luxembourg, Morocco, Netherlands, Poland, Romania, Spain, Sweden, Switzerland, Syria, Tunisia, Turkey, Union of Soviet Socialist Republics, and Yugoslavia. The programme of the seminar included lectures, group discussions, demonstrations and visits to undertakings of public health importance.

WHO provided a consultant and 14 lecturers, and met the cost of attendance of 19 participants from the European Region.

EURO 0422 Study on Nursing Resources and Staffing Patterns
(1970 - 1971) R

To assist countries in conducting national surveys to determine the personnel required to ensure adequate provision of nursing care and co-ordinate the organization and development of nursing education and services; also to assist in studies of nursing practice, education and training and in the organization of national and regional nursing seminars.

EURO 0423 Information on Health Planning in the European Region (1970 -) R

To follow up the work of the Regional Office by reviewing in documented form, for the guidance of national and regional health administrators, experience acquired on short- and long-term health planning in the Region.

EURO 0424 Study on Trends and Developments in Air Pollution Control (1970) R

To review the present situation in air pollution control in Europe and to consider trends and future activities for coping with the growing problems in this field. The study follows up the symposium on the health effects of air pollution, held in Prague in 1967, and previous WHO work on the subject.

As from 1971, the project will become part of the regional long-term programme for environmental pollution control.

EURO 0425 Study on Planning and Design Criteria for Community Water Supplies (1970) R

To review the present design criteria in use in the Region with a view to establishing, taking into account their health implications, minimum requirements applicable in particular to developing areas.

As from 1971 the study will become part of the regional long-term programme for environmental pollution control.

EURO 0428 Seminar on Modern Teaching Methods, Madrid (6 - 10 April 1970) R

The purpose of the seminar was to discuss the latest advances in medical teaching methods and the practical uses of educational science. (See page 153.) There were 30 participants from Algeria, Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Finland, France, Greece, Hungary, Iceland, Ireland, Italy, Malta, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Turkey, Union of Soviet Socialist Republics, United Kingdom, and Yugoslavia.

WHO provided 11 temporary advisers and met the cost of attendance of 28 participants.

EURO 0430 Integration of Tuberculosis Control with the Work of the General Health Services (1970 - 1971) R

To enable tuberculosis specialists and health administrators to examine the problems of integrating certain control measures, such as case-finding, prophylaxis and treatment, into the work of the general health services.

EURO 0431 Conference on Postgraduate Dental Education, London (20 - 24 April 1970) R

The aims were to follow up the conference on undergraduate dental education held in 1968, exchange experience in postgraduate education in dental public health and other sub-specialties concerned with preventive measures, and make proposals relevant to the preparation of specialists in those fields. There were 32 participants from Austria, Belgium, Bulgaria, Canada, Czechoslovakia, Denmark, Federal Republic of Germany, Finland, France, Greece, Hungary, Iran, Ireland, Israel, Italy, Malta, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Turkey, Union of Soviet Socialist Republics, United Arab Republic, United Kingdom, and Yugoslavia.

WHO provided a consultant and seven temporary advisers and met the cost of attendance of 25 participants from European countries.

EURO 0432 Conference on the Training of Personnel for the Psychiatric Services, Izmir, Turkey (16 - 20 June 1970) R

The purpose of the conference was to review in detail the problem of training nursing and paramedical staff at various levels in the light of the new trends in the mental health services, the increasing demand made on them, and the general shortage of trained staff. There were 30 participants from Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Federal Republic

of Germany, Finland, France, Greece, Hungary, Iran, Ireland, Italy, Malta, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Tunisia, Turkey, United Kingdom, and Yugoslavia.

WHO provided seven temporary advisers and met the cost of attendance of 23 participants.

EURO 0443 Course on Teaching Methods for Nurse Educators (French Language), Lyons (29 June - 18 July 1970) R

The purpose of the course was to provide instruction in the latest advances in nursing education, with special attention to the process of learning, methods of teaching and the evaluation of students' school performance.

WHO provided two temporary advisers and fellowships for 14 nurse educators from Algeria, Belgium, Bulgaria, France, Italy, Morocco, Poland, Romania, Spain and Switzerland.

EURO 0434 Study on Education and Training in Rehabilitation (1970) R

The study aimed at examining the role and scope of undergraduate and postgraduate teaching on rehabilitation and at summing up experience available in the countries of the Region with a view to promoting such teaching. WHO provided two consultants who visited a number of European countries to collect the information required.

EURO 0444 Study on the Contribution of WHO to a Joint European Programme in Road Accident Prevention and Control (Sept. - Oct. 1970) R

A consultant was provided for three weeks to make a review of the road accident situation with a view to promoting the co-ordination of work in European countries for the prevention and control of road accidents. Previously this consultant had attended, on WHO's behalf, the joint WHO/ECE Working Party on Road Traffic Accidents, held in July 1970.

EURO 0445 Preparation of a Long-term Programme of Environmental Pollution Control (1970 - 1971) R

To prepare a regional long-term programme of environmental pollution control.

EURO 0774 International School of Advanced Nursing Education (Russian Language), Poland (1969 -) R

To give assistance to advanced nursing education in Russian, similar to that previously given to nursing education in English and French, for preparing nurses for leading positions in specialized branches of nursing, for nursing education and administration, and for research.

EURO 1345 Cancer Control (1968 -) R

To encourage the efforts now being made in various European countries to initiate programmes for the early detection of cancer of different sites and for cancer registration, by providing advisory services and training. This project is a follow-up of previous activities in the field of cancer epidemiology (1967), studies on cancer control and treatment (1966 - 1967), and the training of teachers in cancer cytology (1967 - 1968).

EURO 1383 Course on Hospital and Medical Administration (in Russian and English), Moscow (15 Oct. 1970 - 15 July 1971) R

To assist in training medical administrators at a one-year postgraduate course at the Central Institute for Advanced Medical Education, Moscow, by providing visiting lecturers and fellowships, and to arrange for follow-up and refresher activities.

Similar assistance was provided for a course given in 1969-1970.

EURO 1384 Study on Training in Hospital Administration (1970) R

The aim of the study was to examine training requirements for hospital administrators in the light of the changing pattern of hospital services, the new concept of the hospital and the progress made in medical and administrative techniques.

Two consultants and three temporary advisers attended a meeting in Copenhagen on 19 and 20 May to plan for the study, which was finalized in December.

EURO 1514 Study on Child Dental Health Services in Europe (1970 - 1972) R

To follow up the survey on child dental health in Europe and prepare for projects on the organization of child dental health services as from 1973 in order to determine the conditions required for systematic treatment of children and for effective use of dental manpower.

EURO 2133 Study on Chronic Rheumatoid Arthritis (1966 - 1970) R

The aim was to follow up the technical conference on the public health aspects of chronic rheumatoid arthritis, held in 1963, by giving further support to and ensuring the co-ordination of prevalence studies in which an accepted methodology would be used, and by enabling physicians to gain sufficient knowledge of epidemiology to permit them to start studies in this field in their respective countries.

Two working groups were convened—one in Copenhagen from 28 to 30 September 1966 and another, to summarize the results of the study and plan for its continuation without WHO assistance, in Manchester (England) from 23 to 25 November 1970. The first was attended by a consultant and nine temporary advisers from Bulgaria, Czechoslovakia, Denmark, Netherlands, Sweden, Union of Soviet Socialist Republics, and United Kingdom, and the second by 10 temporary advisers from Bulgaria, Czechoslovakia, Finland, France, Netherlands, Sweden, Union of Soviet Socialist Republics, and United Kingdom.

Fellowships of from one to eleven months were awarded to candidates from Bulgaria, Czechoslovakia, Finland, France and the Union of Soviet Socialist Republics for training at the department for chronic rheumatoid arthritis, Manchester University. The head of the department and one of his staff members visited some co-operating centres for rheumatoid diseases.

EURO 2161 Course on Vital and Health Statistics (in English), London (24 Sept. - 5 Dec. 1970) R

A course on vital and health statistics has since 1962 been given by the London School of Hygiene and Tropical Medicine and the General Register Office, London. For the 1970 course WHO provided fellowships for two trainees from the Federal Republic of Germany and Italy and (under another project) for a trainee from Finland.

EURO 2162 Course on Methods of Medical Statistics and Epidemiology (in French), Brussels (3 Feb. - 31 May 1970) R

The annual course has been held by the Free University of Brussels since 1962, to provide training in medical statistics and epidemiology. For the 1970 course WHO provided fellowships for four trainees from Austria, Czechoslovakia, France and Switzerland and (under other projects) for seven trainees from Austria, Belgium, Poland, Romania, Spain and Turkey.

EURO 2163 Course on the Application of Statistical and Epidemiological Methods to Medicine and Public Health (in Russian), Bratislava (3 Sept. - 12 Dec. 1970) R

An annual course, in Russian, held in 1965 and 1966 in Prague and from 1967 in Bratislava, to give physicians and health

statisticians training in the application of statistical methods to epidemiological and clinical studies. For the 1970 course WHO provided three lecturers and fellowships for three trainees from Bulgaria, Poland and Union of Soviet Socialist Republics and (under other projects) for four trainees from Bulgaria, Romania, Union of Soviet Socialist Republics, and Yugoslavia.

EURO 2594 Working Group on Education and Training in Long-term Care, including Geriatrics, Florence (10 - 13 Nov. 1970) R

The purpose was to follow up a series of courses, held in English, French and Russian, on the medical and social aspects of care of the elderly. Teachers in geriatrics and former participants in WHO courses discussed education and training in relation to the medical, social and organizational aspects of this growing public health problem.

WHO provided a consultant and met the cost of attendance of the 18 participants (temporary advisers) from Czechoslovakia, Denmark, Federal Republic of Germany, France, Hungary, Italy, Netherlands, Norway, Portugal, Sweden, Switzerland, Union of Soviet Socialist Republics, and United Kingdom. A representative of the United Nations attended the meeting.

EURO 2943 Study on the Efficiency of Medical Care (1970 - 1971) R

To study recent development and follow up national studies on the efficiency of health care which have been made since the 1966 symposium on the efficiency of medical care and to prepare for a conference on the subject in 1972.

EURO 3093 Working Group on the Regional Office's Activities in the Field of Medical Computing, Bratislava (24 - 26 Feb. 1970) R

The purpose of the meeting was to assess the advantages and possibilities at present offered by the use of computers in medicine and public health and to advise the Regional Office on the formulation of a policy and programme of work in that field, with a view to meeting requests made by the public health services of European countries. The participants in the meeting were clinicians, administrators, computer scientists, statisticians, epidemiologists, teachers and research workers.

WHO provided a consultant and 12 temporary advisers from Czechoslovakia, Denmark, Federal Republic of Germany, France, Sweden, United Kingdom and United States of America.

EURO 3361 Training of Sanitary Engineers (Russian Language) (1966 -) R

To assist the annual postgraduate course in sanitary engineering in Poland.

For the second course, arranged from 9 November 1970 to 31 July 1971, WHO provided fellowships for six trainees from Bulgaria, Czechoslovakia, Hungary and Union of Soviet Socialist Republics.

EURO 3362 Training of Sanitary Engineers (French Language) (1967 -) R

To assist in the development of an academic course for sanitary engineers and provide training for teaching staff.

EURO 3873 Development of National Programmes for the Surveillance of Communicable Diseases (1970 -) R

To assist countries in initiating or developing national programmes for the surveillance of communicable diseases of public health importance and to stimulate, assist and co-ordinate inter-country co-operation and exchange of information in this field.

EURO 4000.3 Working Group on the Misuse of Psychotropic Drugs, Geneva (26 - 28 Jan. 1970) R

The purpose of the meeting, which was attended by five temporary advisers from Denmark, the Netherlands, Sweden, Switzerland and the United Kingdom, and four WHO staff members, was to assist the Regional Office in formulating proposals for a long-term plan in the field of drug dependence and abuse. Discussions were held on the situation in certain countries, characteristics of different types of drug dependence, the methodology of collection and dissemination of relevant information on an inter-country basis, and research studies and their co-ordination, and recommendations were made regarding future action by WHO.

EURO 4200.2 Working Group on Methodology of Psychiatric Outpatient Data Collection, Lindau, Federal Republic of Germany

(2 - 4 Sept. 1970) Special Account for Miscellaneous Designated Contributions

The purpose of the meeting, which was part of the Region's long-term mental health programme, was to discuss methods of collecting data on psychiatric outpatients that would enable more comprehensive and useful mental health statistics to be compiled. There were nine participants from Czechoslovakia, Federal Republic of Germany, France, Netherlands, Poland, Spain, Sweden, United Kingdom, and Yugoslavia. They reached agreement on a protocol and a pilot study on data collection began in December.

WHO provided a consultant and subsistence for the participants, whose travel expenses were met by their governments.

EURO 4200.3 Working Group on Classification of Mental Health Service Activities, Düsseldorf, Federal Republic of Germany

(2 - 4 Nov. 1970) Special Account for Miscellaneous Designated Contributions

The purpose of the meeting, which was part of the Region's long-term mental health programme, was to analyse information collected from 18 European countries on facilities and personnel in mental health services, and on the organization and administration of the services. There were 21 participants from Belgium, Bulgaria, Czechoslovakia, Denmark, Federal Republic of Germany, France, Greece, Ireland, Italy, Netherlands, Norway, Spain, Sweden, Switzerland, Turkey, Union of Soviet Socialist Republics, United Kingdom, and Yugoslavia. On the basis of the information at their disposal, they made proposals for the future development of the project, which is to be extended to the other countries of the Region in 1971.

WHO provided a consultant and met the cost of attendance of 18 participants.

EURO 5000 Evaluation of the Progress of the Regional Cardiovascular Diseases Programme (1968 -) R

To evaluate, by means of consultant services and *ad hoc* meetings, the progress of work on cardiovascular diseases and to suggest changes in the programme in the light of new advances in the field of cardiology.

EURO 5010 Establishment of Ischaemic Heart Disease Registers (1968 -) R

To prepare a registration system suitable for the notification and surveillance of ischaemic heart disease in the population of a selected area (or possibly in a group of workers) with a view to obtaining accurate and comparable data on a number of aspects of the disease. When methods have been worked out, model

registers, which can serve also for training purposes, will be set up in certain areas.

EURO 5011 Epidemiological Studies on the Prevalence and Incidence of Ischaemic Heart Disease and Hypertension (1968 -) R

To follow up previous prevalence surveys, stimulate activities and achieve a better knowledge of the etiology and prevention of ischaemic heart disease.

EURO 5012 Study on Medical Certification of Causes of Death (1968 -) R (International Agency for Research on Cancer)

To study the evidence on which the diagnosis of the cause of death is based, and the way in which it is interpreted in different European countries. Special emphasis will be placed on the diagnosis of ischaemic heart disease, but attention will also be paid to cancer of the gastro-intestinal tract. This project is a follow-up to the study of the accuracy and comparability of statistics on causes of death made as part of the health statistical studies project EURO 0215 started in 1962.

EURO 5013 Training in Epidemiological Methods (1968 -) R

To provide facilities for training doctors in epidemiological methods applicable to cardiovascular diseases in view of the shortage, in some countries of the Region, of medical personnel trained in this field.

EURO 5020 Study on the Evaluation of Coronary Care (1968 -) R

To assess the value and cost to the community of coronary care services by estimating the frequency of cardiac emergencies requiring such services in defined areas, assessing the cost and staffing needs, and evaluating reports on the reduction of mortality.

EURO 5021 Training in Coronary Care (1968 -) R

To provide for the individual training of doctors and other health personnel in intensive coronary care and its organization in selected units; and for the participation of lecturers in national courses on coronary care.

EURO 5030 Study on the Effects of Rehabilitation in Patients with Cardiovascular Diseases (1968 -) R

To carry out controlled co-ordinated studies of the effects of rehabilitation in cardiovascular disease patients, beginning with convalescence from acute disease (or with the patient's first consultation) and covering possible influence of rehabilitation on prevention of later incapacity and factors causing relapse or affecting length of life.

EURO 5031 Development of Training Centres for the Rehabilitation of Patients with Cardiovascular Diseases (1968 -) R

To organize courses in a few research centres to enable doctors, nurses and other technical staff to study the problems connected with the rehabilitation of cardiovascular disease patients.

EURO 5032 Training in the Rehabilitation of Patients with Cardiovascular Diseases (1968 -) R

To provide for training in the rehabilitation of patients with cardiovascular diseases.

EURO 5040 Health Education of the Public in Cardiovascular Diseases (1968 -) R

To assess the impact of advice and recommendations by physicians, scientific bodies and governmental agencies aimed at preventing various cardiovascular diseases.

EASTERN MEDITERRANEAN REGION

Afghanistan 0011 Malaria Eradication Programme (1956 - 1974) R UNICEF

To eradicate malaria and prevent the re-establishment of endemicity.

Afghanistan 0013 Medical Education (1952 - 1973) R

To strengthen departments of the faculties of medicine of the Universities of Kabul and Nangarhar, develop teaching programmes and train staff.

Afghanistan 0031 Institute of Public Health, Kabul (1956; 1958; 1961 - 1974) R UNICEF

To develop the Institute of Public Health for service, research and training of public health workers and to reinforce the teaching of sanitary engineering subjects in the undergraduate civil engineering course.

Afghanistan 0033 Tuberculosis Advisory Services (1958; 1961 - *beyond 1972*) UNDP/TA UNICEF

To expand tuberculosis control services in and around Kabul and in the provinces, within the framework of the basic health services, and to train health personnel in the necessary techniques.

Afghanistan 0035 Nursing Advisory Services (1957 -) UNDP/TA

To strengthen nursing administration at national and local levels, and develop and co-ordinate nursing and midwifery education and services.

Afghanistan 0059 Development of Basic Health Services (1965 - 1975) R UNICEF

To establish, throughout the country, basic health services into which malaria eradication services can be integrated; to ensure adequate supervision and guidance of health personnel in the services through the strengthening of provincial health administration; to further the development of the health aspects of rural development projects in the whole country, and to train personnel.

Afghanistan 0061 Central Authority for Housing and Town Planning, Kabul (1965 - 1970) R

A sanitary engineer assisted the Central Authority for Housing and Town Planning in the design of (i) a water-carriage system to replace the dry-conservancy provisions in two areas of Kabul and (ii) a treatment plant for the water supply of Faizabad. He also helped with the study of a storm-drainage system for the town of Sia-Sang and in drafting legislation related to health and housing, and advised the Ministry of Health on the development and strengthening of environmental health work. A 12-month fellowship and supplies and equipment were also provided under the project.

Afghanistan 0064 Smallpox Eradication (1967 -) R

To achieve smallpox eradication through an effective surveillance and maintenance system and the continuation of mass vaccination.

Afghanistan 0066 Community Water Supply and Sanitation (1966 - 1974) R

To establish an environmental sanitation unit in the Ministry of Public Health and plan and implement a long-term programme of community water supply, waste disposal and general sanitation.

Afghanistan 0067 School of Radiography (1969 - 1974) R

To develop the school of radiography in Avicenna Hospital, Kabul, and train personnel.

Afghanistan 0068 Nursing Administration and Education (1967 - 1972) R

To develop nursing services administration and improve the clinical preparation of student nurses.

Afghanistan 0071 Maternal and Child Health, Kabul (1970 - *beyond 1972*) UNDP/TA

To reorganize and strengthen comprehensive maternal and child health services, including family planning services, and provide refresher and orientation courses in maternal and child health for medical, paramedical and auxiliary personnel.

Assistance previously provided under the provincial maternal and child health services and training project (Afghanistan 0056) is being continued under this project.

Afghanistan 0075 Health Legislation (Feb. - March 1970) R

A consultant assisted in preparing draft health laws in various fields.

Afghanistan 0200 Fellowships R: Clinical and social paediatrics (nine months), environmental sanitation (two for nine months), health administration and education (two for two weeks), health education (two for four months), nursing (three for 12 months), public health (two for 12 months), public health administration (nine months), surgery (12 months), tropical public health (10 months), tuberculosis control (two weeks), vaccine production (six months).

Bahrain 0200 Fellowships R: Health statistics (six months), laboratory techniques (12 months), medical records (12 months), operating theatre technology (12 months), physical therapy (two for 12 months), public health nursing (one for 11 months, one for 12 months).

Cyprus 0200 Fellowships R: Dietetics (12 months), intensive care units for cardiac patients (six months), laboratory techniques (11 months), medical records (12 months), middle management (three months), nursing administration (three months), nursing care of premature infants (six months), nursing of thoracic cases (six months), oral and maxillo-facial surgery (12 months), psychiatric medicine (12 months), psycho-geriatric nursing (four months), public health administration (two weeks), undergraduate medical studies (three for 12 months), vital and health statistics (nine months).

Cyprus 0201 Fellowships UNDP/TA: Undergraduate medical studies (two for 12 months).

Ethiopia 0003 Advisory Services on Vital and Health Statistics
(1966 -) UNDP/TA

To strengthen the health statistical unit in the Ministry of Public Health, improve the collection, compilation and publication of vital and health statistical data and train statistical personnel of various categories at central and provincial levels.

Ethiopia 0006 Tuberculosis Control
(1959 - beyond 1972) UNDP/TA UNICEF

To formulate and implement a comprehensive national tuberculosis control programme, integrated in the general health services.

Ethiopia 0009 Public Health College and Training Centre, Gondar (1954 - 1972) R UNICEF (AID)

To train health personnel to staff the expanding health services, particularly in rural areas.

Ethiopia 0017 Medical Education (1964 - 1973) R

To develop the medical faculty at the Haile Selassie I University in Addis Ababa.

Ethiopia 0024 Advisory Services in Epidemiology
(1966 -) UNDP/TA

To plan, develop and operate epidemiological services at all levels of the health services.

Ethiopia 0025 Development of Provincial Health Services
(1970 - 1975) R UNICEF

To develop provincial and peripheral health services.

The work done in the first phase of this project, assisted by WHO from 1962 to 1969, is described in the Annual Report for 1969.¹

Ethiopia 0032 Community Water Supply
(1967 - 1972) UNDP/TA

To investigate, design and supervise the construction of community water supplies in the small towns of Ethiopia, starting in Tigre Province.

Ethiopia 0035 Hospital Planning and Administration
(1970 - beyond 1972) R

To develop hospital and medical records in the Duke of Harrar Memorial Hospital, organize the records department and establish a training programme for hospital records personnel.

Ethiopia 0036 Environmental Health Services (1967 - 1972) R

To plan and administer a national environmental health programme.

Ethiopia 0037 Health Planning (1968 -) UNDP/TA

To plan national health services and co-ordinate health programmes as a part of the national five-year development plan.

Ethiopia 0039 Malaria Eradication Training Centre
(1959 - 1972) R

To train various categories of personnel for the malaria eradication programme.

Ethiopia 0040 Malaria Eradication Programme
(1967 - 1972) R (AID)

To eradicate malaria from the whole country by stages. The eradication programme follows the pre-eradication programme carried out with WHO assistance from 1962 to 1966.

Ethiopia 0042 Smallpox Eradication
(1968 - beyond 1972) R

To achieve smallpox eradication and establish active surveillance and maintenance systems.

Ethiopia 0200 Fellowships R: Dermatology (10 months), nursing (three for 12 months), nursing of tuberculosis patients (12 months), otorhinolaryngology (12 months), psychiatric nursing (12 months), psychiatric social work (12 months), rodent control and fumigation (two for three months), smallpox vaccine production (two months), undergraduate nursing studies (three for 12 months), X-ray techniques (15 months).

French Territory of the Afars and the Issas 0200 Fellowships R: Tuberculosis laboratory techniques (six months), X-ray techniques (12 months).

Iran 0001 Malaria Eradication Programme
(1957 - 1972) R UNICEF

To eradicate malaria progressively throughout the country.

Iran 0026 Public Health Laboratory (Oct. - Dec. 1969) R

A consultant assisted in establishing a mycology section in the public health laboratory, Teheran, and in training personnel in mycology, and helped with the technical organization of the laboratory.

Iran 0028 Mental Health Services
(1953 - beyond 1972) R

To improve mental health services within the framework of successive health plans, and to promote training, studies and research in mental health.

Iran 0030 Occupational Health (1970 - 1972) R

To establish an industrial hygiene laboratory in the faculty of public health, University of Teheran, and carry out a field survey for the assessment and control of the working environment in a selected sample of Iranian industry.

Consultant services were provided under this project in 1963 and 1964.

Iran 0043 Postgraduate Education in Public Health
(1964 - beyond 1972) R

To develop postgraduate training in public health and allied fields at the faculty of public health, University of Teheran.

Iran 0047 Rehabilitation and Training in Physical Therapy
(1969 - 1972) R

To train students at the school of physical therapy, University of Teheran.

Iran 0049 High Institute of Nursing, Teheran
(1967 - 1972) R UNDP/TA

To develop basic nursing education at university level.

Iran 0052 Post-basic Nursing Education
(1963 - 1975) R

To strengthen nursing services through post-basic nursing education to prepare teachers, supervisors and administrators for leading posts in nursing.

¹ See *Off. Rec. Wld Hlth Org.*, 180, 216.

Iran 0053 Laboratory for Pharmaceutical Quality Control (1966 - 1971) UNDP/TA

To develop the quality control laboratory for the analysis and assay of pharmaceutical preparations, chemicals and dependence-producing drugs, revise legislation governing the trade, and train local staff in modern techniques of drug analysis.

Iran 0059 Medical Faculty, Isfahan (1966 - 1970) R

To improve the teaching of medical undergraduates and develop research at the Isfahan Medical Faculty, particularly in the basic medical sciences.

Iran 0065 Teaching of Sanitary Engineering, Pahlavi University, Shiraz (1968 - 1972) R

To provide instruction in sanitary engineering to students of civil engineering at the Pahlavi University, Shiraz.

Iran 0068 Faculty of Dentistry, University of Teheran (1966; 1970 - 1972) R

To assess the programme and develop the School of Dentistry, University of Teheran.

Iran 0070 Pre-investment Survey of Sewerage Needs and Facilities in Teheran (1970 -) UNDP/SF

To undertake a pre-investment survey for sewerage and storm drainage in the Greater Teheran area and to draw up master plans and first-stage feasibility studies to assist in securing investment for construction. The survey will also cover the treatment and re-use of waste water for agricultural purposes.

Iran 0075 Sanitation and Control of Food Products (1970 - 1972) R

To organize measures for improving control of the hygiene of food products.

Iran 0077 Cardiovascular Diseases (April - May 1970) R

Two consultants were provided for five weeks to assist the Cardiovascular Medical Centre of the Queen Pahlavi Foundation in organizing its cardiology service.

Iran 0078 Evaluation of Medical Rehabilitation Services (March - April 1970) R

A consultant was provided for about six weeks to assist the Ministry of Health and the National Iranian Society for Rehabilitation in connexion with the development of rehabilitation services.

Iran 0080 Health Aspects of Family Planning (1970 - beyond 1974) UNFPA

To develop the programme for the study of human reproduction, including fertility control, and to train technical personnel for the programme.

Iran 0100 Medical Education (1970 - beyond 1973) R

To develop training and research work in the medical faculties of the seven universities of Iran, particularly in the basic medical sciences and in public health.

Iran 0200 Fellowships R: Child health and care of premature infants (three weeks), child health and family planning (12 months), clinical pathology (12 months), environmental health (two for 12 months), epidemiology and communicable disease

control (two for nine months), health planning (10 weeks), human reproduction (three months), measles vaccine safety tests (six months), nursing (four for 12 months), nursing legislation (one month), obstetrics and gynaecology (one for seven weeks, one for 12 months), paediatrics (12 months), public health administration (one for four months, one for nine months), rehabilitation (one for two weeks, one for one month), sanitary engineering (16 months), statistics (six weeks), tuberculosis control (two for two weeks).

Iraq 0011 Malaria Eradication Programme (1957 - beyond 1972) R UNICEF

To eradicate malaria from the whole country, as an extension of the malaria control programme with which WHO has assisted since 1952.

Iraq 0033 College of Medicine, Baghdad (1958 - 1959; 1961; 1964 - 1966; 1968 - 1970) R

The aim was to develop the department of social and preventive medicine and promote postgraduate medical education at the College of Medicine, Baghdad. WHO provided a professor of public health and preventive medicine and a lecturer in parasitology in 1958 and 1959, a consultative group on medical education for a month in 1961, a professor of public health and social medicine for 18 months in 1965 and 1966, and, between 1964 and 1966 and in 1968, three consultants. In 1969 and 1970 six fellowships, in forensic medicine, microbiology, anatomy, medical education and human embryology, were awarded to teachers of the College.

Iraq 0035 Training of Health Personnel (1960 - 1970) UNDP/TA

The aim was to train sanitarians for the health services. WHO provided a technical adviser in 1963, a sanitary engineer from 1959 to 1968 and a sanitarian from 1968 to 1970, as well as supplies and equipment.

In 1959 a training centre was established, providing a two-year sanitarian's course for intermediate school graduates. A year later the centre became a permanent school for sanitarians, accredited by both the Ministry of Education and the Ministry of Health. During the first six years of operation 164 sanitarians were trained. The entrance qualification was then raised to secondary school certificate and the school became an institute; the curriculum was improved and extended to three years. By the time the project ended 314 sanitarians had been trained.

Iraq 0037 College of Nursing, Baghdad (1962 - 1973) R

To prepare nurses for leading posts in nursing service administration and in nursing education.

Iraq 0040 Hospital Services Administration (1966 - 1972) R

To strengthen hospital administration services at the Medical Centre, Baghdad.

Iraq 0049 Rural Health Advisory Services (1964 - 1972) UNDP/TA

To plan and develop rural health services and use them for field training of professional and auxiliary health personnel.

Iraq 0053 College of Medicine, Basra (1969 - 1970) R

From October to December 1969 a consultant in pharmacology assisted with the establishment of a department of basic medical sciences at the medical college of Basra University. Supplies and equipment were also provided.

Iraq 0054 Community Water Supply (1968 - 1972) UNDP/TA

To appraise the community water supply situation in the rural areas and various municipalities and prepare a master plan for rural water supplies.

Iraq 0058 College of Medicine, Mosul (1969 - 1970) R

A consultant in pharmacology for six months, and supplies and equipment, were provided for the College of Medicine, Mosul.

Further assistance is to be given through the medical education project, Iraq 0100, planned to start in 1971.

Iraq 0061 Public Health Laboratory Services (1967; 1969 -) R

To develop microbiological diagnostic facilities adequate for the needs of the curative and preventive health services and also to develop the production of vaccines.

Iraq 0068 Family Planning (1970 -) UNFPA

To develop family planning activities within the health services.

Iraq 0200 Fellowships R: Anaesthesiology (two for 12 months), bacteriology (12 months), bacteriology of diarrhoeal diseases (three months), cholera (one month), dental health (12 months), midwifery (two for three weeks), pathology (12 months), physical medicine and rheumatology (12 months), psychiatric medicine (12 months), radiodiagnosis (12 months), radiotherapy (12 months), urology and kidney transplantation (six months).

Israel 0005 Malaria Eradication Programme (Sept. - Oct. 1970) R

A consultant was provided for three weeks to undertake an epidemiological evaluation of antimalaria operations in certain areas.

Israel 0007 Nursing Education (1965 - 1972) R

To prepare plans for the further development and strengthening of nursing education and services.

Israel 0022 Dental Health (Sept. 1970 - Jan. 1971) R

A consultant was provided to assist with the course for dental auxiliaries in the dental division of the Tel Aviv University Faculty of Continuing Medical Education.

Israel 0025 Medical Education (1964 - 1972) R

To develop teaching and research at the Hadassah Medical School and related institutions.

Israel 0038 Air Pollution Control (1965 - beyond 1972) R

To assess the importance of air pollutants in certain areas and plan a programme of investigation and research.

Israel 0041 Industrial Water Use and Conservation (1969) UNDP/TA

Two fellowships—one of three months for study of waste-water disposal and one of four months for study of industrial waste-water technology—were awarded under this project, for which consultant services were provided in 1966 and 1968.

Israel 0043 National Survey on Refuse Disposal (1967 - 1970) R

A consultant was provided in November 1967 to assist in planning and organizing a national survey on refuse disposal

and from November 1968 to January 1969 to help to develop a national programme for the management of solid wastes. The same consultant paid a third visit to Israel in August and September 1970 to follow up previous recommendations and advise on long-term planning and implementation of the programme.

Israel 0044 Geriatric Services (March - April 1970) R

A consultant visited Israel for five weeks to follow up progress since 1967, when he helped to draw up a plan for comprehensive geriatric services. He took part in lectures and seminars on geriatric problems, and in teaching rounds in hospital wards, and submitted a number of recommendations.

Israel 0045 Coronary Care Unit (1969 - 1972) R

To develop the coronary care unit of the Tel Hashomer Government Hospital for use as a training centre.

Israel 0047 Quality Control of Pharmaceuticals (Sept. - Oct. 1970) R

A consultant was provided for two months to study and advise on the pharmaceutical control system.

Israel 0049 Institute for Environmental Health Research (1970) R

A consultant was provided in November 1970 to assist with an assessment of the present status of research on environmental health in Israel.

Israel 0200 Fellowships R: Community health and family medicine (two months), cytology (14 weeks), entomology, zoology and pest control (two months), food industry (legislation, organization and control) (three months), food quality control and food legislation (two months), hospital administration (three months), hospital and medical care administration (12 months), organ transplantation (three months), pesticide residues in food and water (two months), public health dentistry (12 months), rehabilitation (one month), undergraduate veterinary medical studies (12 months), virology (12 months), water pollution (two weeks).

Jordan 0002 Nursing Education (1965 - 1973) R UNDP/TA

To strengthen nursing education through the expansion and extension of the programme of the College of Nursing, Amman.

Jordan 0006 Malaria Eradication Programme (1958 -) R UNDP/TA (AID)

To eradicate malaria from the whole country and prevent its re-establishment.

Jordan 0022 Consultative Group on Medical Education (1970 - 1972) R

To plan a new medical faculty.

Jordan 0023 Vaccine Production (1959 - 1972) R

To develop the production of diphtheria and tetanus vaccines, initiate the production of triple (diphtheria/pertussis/tetanus) vaccine and train technical personnel.

Jordan 0028 Rehabilitation Services (1967 - 1973) R

To develop the rehabilitation centre and introduce modern methods of physical therapy; also to plan and develop training programmes for physical therapists and establish a prosthetic workshop.

Jordan 0029 Tuberculosis Control
(1964 - 1966; 1970 - *beyond 1972*) R

To assess the tuberculosis problem and the progress achieved so far in controlling the disease; and to formulate a comprehensive national tuberculosis control programme, integrated in the general health services.

Jordan 0030 Virology Laboratory (1968 -) R

To develop a virology diagnostic section in the central public health laboratory, Amman.

Jordan 0033 Health Training Institute (1966 - 1972) R

To establish and develop a health training institute for multi-purpose health personnel required for staffing health centres and dispensaries in rural areas.

Jordan 0035 Municipal Waste Disposal, Amman
(1968 - 1972) UNDP/TA

To provide for advice to the Municipality of Amman on the operation and maintenance of the sewage works and to develop the national water supply and sewage disposal programme.

Jordan 0040 Radiotherapy, Radiology Department, Amman
(1970 - 1972) UNDP/TA

To reorganize the radiotherapy unit of the Radiology Department in Amman and provide training for radiotherapy and nuclear medicine specialists.

Jordan 0041 Pharmaceutical Services (1969 - *beyond 1972*) R

To improve pharmaceutical services and the management of medical stores and, eventually, to organize, in Jordan, a regional training centre for the management of pharmacy and medical stores.

Jordan 0200 Fellowships R: Anaesthesiology (12 months), communicable disease epidemiology and control (nine months), food analysis (12 months), glass-blowing techniques (three months), international health sections—observation visits (eight weeks), malaria epidemiology (four weeks), maxillo-facial surgery (12 months), microbiology (six months), pathology (12 months), pharmaceuticals (12 months), physical therapy (12 months), psychiatric medicine (12 months), public health (one month), tropical public health (three for 10 months), tuberculosis and chest diseases (eight months).

Kuwait 0004 Nursing Education
(1969 - 1972) R Funds-in-trust

To develop nursing education and nursing services.

For the first phase of this project, two months' consultant services were provided between December 1966 and February 1967.

Kuwait 0006 Vital and Health Statistics
(1969 -) R Funds-in-trust

To develop a national system of health statistics and strengthen the central health statistical unit in the Ministry of Public Health; to train national health statistics and medical records personnel and to assess the need and opportunity for using automatic data processing in public health services.

Kuwait 0200 Fellowships R: Biochemistry (two for 12 months), haematology (12 months), paediatric cardiology (12 months), pharmaceutical analysis (12 months).

Lebanon 0004 Rural Health Unit
(1965 - 1969) UNDP/TA UNICEF

The aim was to organize in Halba a model unit of rural health services to be used also for demonstration and for training of health personnel. WHO provided a public health adviser from March to December 1965 and again from April 1966 to December 1969, a nurse/midwife from October 1966 to July 1967 and supplies and equipment.

The unit covered the population of the Akkar administrative district, of which Halba is the chief town, and included services for maternal and child health, medical care, health education, environmental health and the control of communicable diseases, and public health laboratory services. A maternal and child health centre, with laboratory and dental services, was opened in August 1966 and a well-baby clinic was completed in January 1967. Medical care was provided daily by the out-patient clinic, prescribed medicaments being supplied free of charge. A well equipped dental clinic with X-ray facilities also gave daily service. A health education programme was organized. The WHO physical therapist attached to the rehabilitation centre in Beirut visited the district on several occasions to examine physically handicapped children, some of whom were admitted to the Beirut centre. A programme of construction of environmental sanitation works was partially implemented; the work included repairs and improvements to wells and springs, the installation of sanitary facilities in schools and the construction of a refuse incinerator. In the control of communicable diseases, special attention was given to the development of vaccination programmes. Vaccination against poliomyelitis, smallpox and diphtheria was performed in homes and schools as well as in the antenatal and child clinics. Mass vaccination campaigns against smallpox and poliomyelitis, in which over 16 000 persons were vaccinated, were carried out in 1968 and 1969 respectively and more than 11 000 cholera vaccinations were performed in 1966. The out-patient clinic helped to secure early diagnosis and treatment of communicable diseases and a special ambulance was provided for transport to the fever wards of Tripoli hospital. Information on the prevalence of parasitic diseases was provided by the public health laboratory, which is fully equipped and has a trained technician in charge.

Lebanon 0031 Rehabilitation of the Physically Handicapped
(1963 - *beyond 1972*) R

To develop physical therapy services at the rehabilitation centre at Ouzai, Beirut.

Lebanon 0041 Blood Bank
(1963; 1965 - 1966; 1970 - *beyond 1972*) R

To develop the blood bank.

Lebanon 0044 Pharmaceutical Services
(1967 - *beyond 1972*) R

To develop pharmaceutical services and to organize a pharmacy department in the Ministry of Public Health.

Lebanon 0046 National Wastes Management Plan
(June - Oct. 1970) UNDP/SF

Three consultants were provided to help with the formulation of the request to the United Nations Development Programme (Special Fund component) for assistance with a national plan for wastes management.

Lebanon 0052 Hydro-agricultural Development (Health Aspects)
(1970 -) UNDP/SF (FAO)

To study the environmental health aspects of the irrigation development scheme assisted by the United Nations Development Programme (Special Fund component) for which FAO is the executing agency, particularly with reference to the settlement of population and the provision of sanitary facilities.

Lebanon 0053 Radiation Protection (Nov. 1968 - Aug. 1970) R

WHO provided a radiological physicist who assisted the radiotherapy department of the Institute of Radiology and Cancer Control, Beirut, in the planning and dosimetry of treatments and in establishing new radiotherapeutic techniques, and advised on radiation protection measures. He also helped to draft radiation legislation and to carry out a radiological survey of X-ray installations in the country.

Lebanon 0200 Fellowships R: Cancer of the stomach (six weeks), hospital administration (one month), nursing education (three months), public health administration (two weeks), sanitary engineering (two for 12 months).

Libya 0002 Maternal and Child Health Demonstration and Training Centre, Tripoli (1965 - 1971) Funds-in-trust

To strengthen and expand maternal and child health services in the western provinces; and to train various categories of health personnel in maternal and child health work and in midwifery.

Libya 0003 Nursing Education, Tripoli
(1955 - 1975) R Funds-in-trust

To develop a nursing education programme adapted to local needs and resources in order to provide professional nurses and assistants for the country's expanding health services.

Libya 0006 Communicable Eye Disease Control
(1969 - beyond 1972) Funds-in-trust

To set up services within the developing public health infrastructure to enable the communicable eye disease control activities to be maintained on a permanent basis as an integral part of routine public health duties.

Libya 0007 Health Training Institute, Benghazi
(1955 - 1972) Funds-in-trust UNICEF

To train some selected groups of health auxiliaries and paramedical personnel for hospitals and health centres, particularly in rural areas.

Libya 0008 Nursing Education, Eastern Provinces
(1967 - 1977) R Funds-in-trust

To strengthen the nursing services in Libya through the establishment in Benghazi of a nursing school which will prepare nurses to meet the needs of the country.

Libya 0009 Malaria Eradication Programme (1960 - 1971) R

To eradicate malaria from the whole country. This follows the pre-eradication survey carried out (under the same project number) from June 1958 to September 1959.

Libya 0012 Maternal and Child Health, Benghazi
(1956 -) Funds-in-trust

To train auxiliary maternal and child health personnel to staff maternal and child health and basic health centres in rural areas.

Libya 0020 Food and Nutrition Services
(1965 - 1971) Funds-in-trust

To establish services for the development of a co-ordinated food and nutrition programme, define the main food and nutrition problems and train medical and auxiliary personnel in nutrition.

Libya 0021 Maternal and Child Health Advisory and Supervisory Services (1965 -) Funds-in-trust

To improve and expand maternal and child health services as an integral part of the general health services; to give health education to mothers and children; to increase the efficiency of all maternal and child health workers; and to strengthen and co-ordinate the organization, administration and operation of all services related to the care of mothers and children.

Libya 0022 Tuberculosis Control (Pilot Area)
(1963 - beyond 1972) Funds-in-trust

To set up a tuberculosis centre in Benghazi to train staff and demonstrate tuberculosis control techniques and to serve as the centre of operations for a pilot area project; to plan a national control programme on the basis of the results of the pilot area project.

Libya 0024 Schistosomiasis Control
(1965 - 1971) UNDP/TA Funds-in-trust

To plan and develop schistosomiasis control measures and train personnel.

Libya 0027 National Health Planning (1966 - 1970) UNDP/TA

To assess the health problems in the country and establish priorities for dealing with them; to appraise the efficiency of the health services in meeting the health needs of the population and to draw up guidelines for their future development; to determine the facilities needed in the health services for planning and evaluation and for co-ordination with overall planning for the economic and social development of the country; and to prepare plans for national health programmes.

Libya 0030 Environmental Health Services
(1968 - 1972) Funds-in-trust

To develop a national environmental health programme and environmental health services, including water and sewage laboratories in the Ministry of Health and in the three provinces.

Libya 0200 Fellowships R: Anaesthesiology (12 months), dietetics (10 months), laboratory techniques (one for six months, two for 11 months, two for 12 months), midwifery (seven months), nursing (two for 12 months), public health (one for 10 months, one for 12 months), public health administration (nine months), undergraduate medical studies (one for six months, four for 12 months), X-ray techniques (12 months).

Libya 0204 Fellowships Funds-in-trust: Hospital administration (15 for six months), undergraduate medical studies (12 months).

Pakistan 0011 Institute of Hygiene and Preventive Medicine, Lahore (1967 - beyond 1972) R UNDP/TA

To reorganize the teaching programme and administration of the Institute of Hygiene and Preventive Medicine and establish a department of health education.

Pakistan 0033 Epidemiological Services, East Pakistan (1961 - 1972) UNDP/TA

To develop epidemiological and virological departments in the Public Health Institute, Dacca.

Pakistan 0034 Teaching of Sanitary Engineering, Lahore (1968 - 1972) R

To strengthen the post-graduate sanitary engineering course at the University of Engineering and Technology, Lahore.

Pakistan 0036 Malaria Eradication Programme (1961 - 1975) R (AID)

To eradicate malaria from the whole country, by stages. The eradication programme follows a pre-eradication survey carried out with assistance from WHO in 1959 and 1960.

Pakistan 0038 Nutrition Institute, Islamabad (1967 - beyond 1973) R

To organize the Nutrition Institute, Islamabad, for collecting, processing and disseminating information in relation to human nutrition in the country, and conducting systematic investigations on various aspects of malnutrition in children and on its effects in later life; and to develop programmes for the prevention of malnutrition.

Pakistan 0039 Leprosy Control (1961 - beyond 1972) R

To develop a pilot area where the most suitable methods of leprosy control can be determined and demonstrated, and to prepare a plan of leprosy control.

Pakistan 0041 Smallpox Eradication (1967 -) R Special Account for Smallpox Eradication

To carry out a smallpox eradication programme and develop an effective surveillance system in East and West Pakistan; also to develop the production of freeze-dried smallpox vaccine at the Institute of Public Health, Dacca.

Pakistan 0042 Orthopaedic Workshop (1970 -) R

To reorganize the work of the occupational therapy unit of the Department of Physical Medicine and Rehabilitation, Jinnah Postgraduate Medical Centre, Karachi, and to improve the orthopaedic workshop.

Pakistan 0048 National Health Laboratories, Islamabad (1964 -) R

To develop national health laboratories in Islamabad, with a view to making them the reference laboratories for both West and East Pakistan.

Pakistan 0049 Malaria Eradication Training Centres (1960 - 1970) R

The aim was to train technical staff at all levels in malaria eradication techniques at two training centres in Dacca and

Lahore. Initially WHO provided the services of a malariologist, a sanitary engineer and a technical instructor at each centre, together with fellowships and supplies and equipment. As national staff became available, the WHO staff were gradually withdrawn. WHO staff of the malaria eradication project (Pakistan 0036), into which this project is being incorporated, also gave assistance with courses.

During the period from March 1961, when the first course began, to the completion of WHO assistance to this project, some 170 courses were held for medical officers, sanitary engineers, entomologists, sanitarians, microscopists, etc., from the national malaria eradication programme and from programmes in other countries of the Region. About 4000 successfully completed their training. In addition, training was given at the peripheral level, with the assistance of the staff of the centres.

Pakistan 0050 Tuberculosis Control (1962 - beyond 1972) R UNDP/TA UNICEF

To implement and develop a national tuberculosis programme fully integrated into the basic health services and covering the whole country.

Pakistan 0054 Community Water Supply and Rural Sanitation, West Pakistan (1964 - 1972) R UNICEF

To develop the organization and management of community water supply programmes and study their technical, legal and financial aspects; and to improve rural sanitation.

Pakistan 0057 Hospital and Health Centre Statistics (1967 - beyond 1972) UNDP/TA

To develop model procedures for providing information on the curative and preventive work of hospitals and health centres, carry out special studies on the registration of vital events and on staffing problems, and set up a training centre for medical records officers; and, ultimately, to establish a system of national hospital and health centre statistics.

Pakistan 0061 School of Tropical Medicine and Hygiene, Dacca (1966 - 1972) R

To develop postgraduate training and research at the School of Tropical Medicine and Hygiene in Dacca.

Pakistan 0066 Occupational Health (1969 - 1973) R

To develop, in the Institute of Hygiene and Preventive Medicine, Lahore, and the School of Tropical Medicine and Hygiene, Dacca, a department of occupational health to carry out teaching and research and advise on factory inspection.

Pakistan 0071 Pharmaceutical Quality Control (1967 -) R

To develop services for the quality control of pharmaceutical preparations, both locally manufactured and imported, through the establishment of a central laboratory and the training of staff in modern techniques of drug testing and analysis.

Pakistan 0079 Family Planning (1970 -) UNFPA

To develop health aspects of the family planning programme, particularly with regard to research in biomedicine, reproductive physiology and training of personnel in post-partum and maternal and child health programmes.

Pakistan 0200 Fellowships R: Anaesthesiology (12 months), audiovisual techniques and appliances in medical education (six weeks), blood transfusion (two for 12 months), food and drug analysis (12 months), groundwater development (10 weeks), hospital administration (three months), immunology (three weeks), nutrition (12 months), pharmaceutical chemistry (12 months), public health dentistry (12 months), rural health services (three days), sanitary engineering (12 months), tuberculosis (one for four months, one for six months), vital and health statistics (six months).

People's Democratic Republic of Yemen 0005 Community Water Supply (1969 - *beyond* 1972) R UNICEF

To survey the water supply situation and to improve water supplies throughout the country.

People's Democratic Republic of Yemen 0006 Institute for Health Manpower Development, Al Joumhouria Hospital, Aden (1970 - *beyond* 1973) R UNDP/SF

To establish an institute for the training and development of the paramedical personnel required for the health services.

People's Democratic Republic of Yemen 0007 Public Health Advisory Services (1968 - 1972) R

To strengthen the administration of the health services and develop health programmes.

People's Democratic Republic of Yemen 0008 Malaria Control (1969 - 1972) R

To co-ordinate the development of the malaria service and the rural health services, so as to prepare the country for undertaking a nation-wide malaria eradication programme in due course.

People's Democratic Republic of Yemen 0011 Smallpox Eradication (1969 - 1972) R

To carry out a smallpox eradication programme, and to organize and intensify the surveillance system.

People's Democratic Republic of Yemen 0200 Fellowships R: Anaesthesiology (12 months), biostatistics (six months), blood transfusion (six months), central supplies and sterilization (six months), hospital administration (three for six months), intensive care (12 months), nursing (five for 12 months, one for 14 months), obstetrics and gynaecology (12 months), operating theatre techniques (six months), ophthalmology (three for 12 months), otorhinolaryngology (two for 12 months), pharmacy (12 months), physical therapy (12 months), psychiatric medicine (12 months), public health (12 months), public health administration (two months), public health nursing (13 months), statistics (six months), surgery (12 months), undergraduate medical studies (11 for 12 months), X-ray and electro-medical technology (four months), X-ray techniques (two for 12 months).

Qatar 0002 Training of Health Personnel (1969 - *beyond* 1972) R

To train auxiliary health personnel, including assistant sanitarians, assistant male nurses, laboratory assistants and others from Qatar and neighbouring countries for staffing health services and hospitals; also to develop in-service and refresher training of health personnel already in government employment.

Qatar 0200 Fellowships R: Laboratory techniques (eight months), medical stores organization (four months).

Saudi Arabia 0004 Malaria Pre-eradication Programme (1963 -) R

To build up the technical, administrative and operational facilities for a malaria eradication or control programme, and at the same time to develop the rural health services, so that they may provide efficient support to the eradication or control operations.

Saudi Arabia 0007 Public Health Laboratory Services (1959 - *beyond* 1972) R Funds-in-trust

To provide the country with adequate national health laboratory services, starting with a central public health laboratory in Riyadh.

Saudi Arabia 0013 Tuberculosis Control (1963 - *beyond* 1972) R

To test, through the tuberculosis centre in Riyadh and the mobile units, practical and effective methods of case-finding, and of treatment and follow-up of tuberculosis patients, to be extended later to the whole country; to develop the immunization programme; and to train personnel.

Saudi Arabia 0023 Public Health Advisory Services (1962 - 1963; 1967 - 1972) R

To improve the administration of the public health services and the planning, co-ordination, evaluation and follow-up of health programmes.

Saudi Arabia 0030 Smallpox Eradication (1968 -) R

To carry out a smallpox eradication campaign covering the whole population and develop a surveillance and maintenance system.

Saudi Arabia 0038 Sanitary Engineering and Municipal Programming (1963 - *beyond* 1972) Funds-in-trust

To develop the municipal environmental health programmes, especially as regards water supplies, disposal of sewage and other wastes, housing and town planning; and to organize, in the Ministry of Interior, an environmental health engineering service to undertake the programme.

Saudi Arabia 0200 Fellowships R: Clinical pathology (12 months), haematology (six months), laboratory diagnosis of plague (two months), malaria eradication (one for two months, one for three months), plague epidemiology and control (two months), tropical medicine and hygiene (six months), undergraduate medical studies (two for 12 months).

Somalia 0002 Malaria Pre-eradication Programme (1962 -) R UNDP/TA

To strengthen the national malaria service and at the same time develop the rural health services; to train general health personnel in antimalaria operations, and integrate such operations into the general health services.

Somalia 0008 Health Training Institute (1959 - 1972) R UNICEF

To train various categories of health auxiliary personnel, including medical assistants, assistant laboratory technicians and assistant public health nurse-midwives; and to provide in-service training and refresher courses.

Somalia 0011 Tuberculosis Control(1960 - *beyond* 1972) R UNDP/TA UNICEF

To test, in certain areas, simple, practical and effective methods of tuberculosis prevention by BCG vaccination and case-finding by sputum examination followed by standardized treatment; and to study the possibility of extending these methods to the whole country and integrating them into the work of basic health centres. The project is operated from the tuberculosis centre at Mogadishu, which is also used for training.

Somalia 0013 Basic Health Services(1962 - 1964; 1969 - *beyond* 1972) R UNICEF

To develop, under the Division of Basic Health Services, Department of Health, a rural health demonstration area that will also be used for the training of health personnel.

Somalia 0015 Nursing Education (1961 - 1972) R

To strengthen the nursing services by improving the basic education programme for nurses and midwives.

Somalia 0019 Smallpox Eradication (1967 -) R

To develop the smallpox eradication programme and intensify the surveillance system.

Somalia 0020 Organization of Medical Care (1962 - 1973) R

To improve the medical care services, particularly as regards surgery and anaesthesiology; and to provide clinical training facilities for health personnel, especially student nurses.

Somalia 0025 Public Health Laboratory Services(1966 - *beyond* 1972) R

To develop sound technical methods for laboratory investigation and to provide training facilities, including in-service training for all grades of technical staff. (See page 161.)

Somalia 0200 Fellowships R: Anaesthesiology (12 months), nursing (12 months), obstetrics and gynaecology (12 months), orthopaedics and traumatology (12 months), public health (12 months), rural sanitation (four months), statistics (six months), tropical medicine (12 months), tuberculosis (12 months), undergraduate medical studies (one for five months, one for six months, one for nine months, 15 for 12 months).

Somalia 0201 Fellowships UNDP/TA: Undergraduate medical studies (three for 12 months).

Sudan 0006 Malaria Pre-eradication Programme

(1963 -) R

To build up the technical, administrative and operational facilities for a malaria eradication or control programme, and at the same time to develop the rural health services, so that they may provide efficient support to the antimalaria operations.

Sudan 0012 Leprosy Control (Oct. - Nov. 1970) R

A consultant was provided for one month to review the problem of leprosy in Sudan, and to advise on control methods and the feasibility of integrating control activities into the general health services.

Sudan 0014 Occupational Health (1969 - 1973) R

To develop the division of occupational health and draw up an occupational health programme.

Sudan 0020 Applied Nutrition Programme

(1966 - 1973) R UNICEF (FAO)

To establish a nutrition division in the Ministry of Health, carry out nutrition surveys throughout the country and train personnel.

Sudan 0026 Onchocerciasis Control (1963 - 1973) R

To carry out a survey of onchocerciasis infection in the main section of the Nile north of Khartoum and in Bahr-el-Ghazal and Equatoria Provinces, so as to determine the reasons for the prevalence of the infection, in particular the relationship between the disease in man and the breeding places of the insect vector; to develop a programme for the control and prevention of onchocerciasis and train personnel.

Sudan 0028 Smallpox Eradication (1967 - 1972) R

To carry out a smallpox eradication programme and establish a surveillance and maintenance system.

Sudan 0030 Cancer Control (1963; 1967 - 1970) R

WHO provided a radiotherapist for 12 months, and supplies and equipment, to assist in the development of radiotherapy and radioisotopes services for the treatment of cancer patients at Khartoum Hospital.

Sudan 0032 Malaria Eradication Training Centre

(1963 - 1972) R

To train staff for the malaria eradication service.

Sudan 0036 Environmental Health (1965 - 1971) R

To plan and develop a national environmental health programme, and to organize, in the Ministry of Health, a sanitary engineering service to undertake it.

Sudan 0037 Training of X-ray Technicians (1970 - 1974) R

To train X-ray technicians from Sudan and neighbouring countries.

Sudan 0038 Vital and Health Statistics Advisory Services

(1970 - 1974) R

To supply data processing machines, on a rental basis, to the Division of Vital and Health Statistics, Ministry of Health.

The work done under this project between 1965 and 1968 is described in the Annual Report for 1969.¹

Sudan 0039 Teaching of Paediatrics (1966 - 1972) R

To establish a Department of Paediatrics in the Faculty of Medicine, Khartoum University, to carry out and improve teaching and research on preventive, curative and promotional paediatrics.

¹ See *Off. Rec. Wld Hlth Org.*, 180, 225.

Sudan 0045 Community Water Supply in Rural Areas
(1968 - 1972) R

To develop the national rural community water supply programme.

Sudan 0050 Mycetoma Survey (1969 - 1970) R

The aim was to define the extent of the mycosis problem, teach diagnostic techniques and stimulate the interest of medical and health officers in case-finding, diagnosis, treatment and control of mycoses. WHO provided consultants for three weeks in October 1969 and November 1970, and supplies and equipment.

Sudan 0200 Fellowships R: Bacteriology (three months), BCG vaccination (three weeks), child health (two for nine months), electro-encephalography (12 months), epidemiology and control of communicable diseases (nine months), medical librarianship (six weeks), medical records (12 months), paediatrics and child health services (one month), parasitology (10 months), pathology (two for 12 months), pharmaceutical chemistry (12 months), public health (three for 10 months, one for 12 months), tropical public health (two for 10 months), tuberculosis laboratory techniques (12 months).

Syria 0002 Malaria Eradication Programme
(1956 - 1972) R UNDP/TA

To eradicate malaria from the whole country and prevent its re-establishment.

Syria 0020 Communicable Eye Disease Control
(1966 - beyond 1972) R

To carry out a study of the epidemiology of trachoma and related eye infections and develop effective technical and administrative methods for their control; to train personnel, and to set up adequate services within the existing pattern of public health services for maintaining the control programme on a permanent basis and extending it.

Syria 0030 Public Health and Endemic Diseases Laboratory
(1959 - beyond 1972) R

To develop the services of the public health and endemic diseases laboratory, and particularly the food microbiology section.

Syria 0032 Blood Bank (Nov. 1970) R

A consultant was provided for one week to advise on the establishment of a new blood bank.

Syria 0037 Nursing Education, Damascus (1960 - 1973) R

To set up a national school of nursing that will provide the country with better-qualified nurses and thus contribute to raising the standard of nursing education and nursing services.

Syria 0039 Development of the Technical Health Institute, Damascus (1962 - 1970) UNDP/TA

The aim was to train sanitarians for service in the Ministry of Health and Public Assistance. Both junior and senior courses were given (in conjunction with the inter-country advanced training course, EMRO 0079, as from 1968) and a course for laboratory technicians was started. WHO provided a sanitarian,

who was transferred to project EMRO 0079 in 1970. A consultant in paramedical education assisted the project for two months in September 1970.

Syria 0045 Tuberculosis Control
(1965 - beyond 1972) R UNICEF

To develop a tuberculosis control programme to be integrated in the national health services and to train personnel, following the appraisal of the programme made in 1965 and 1966 by a WHO consultant.

Syria 0047 Medical School, Aleppo
(1966 - 1972) UNDP/TA UNDP/SF

To develop the Medical School, Aleppo, and raise the standard of medical education and research in the country.

Syria 0051 Sanitary Engineering (Sewage Disposal)
(1969 - 1970) UNDP/TA

A consultant made a survey of the sewerage and waste disposal situation in Syria, advised the Government on sewerage and sewage treatment schemes, and helped to prepare a request to the United Nations Development Programme (Special Fund component) for assistance in respect of a sewerage, drainage and solid waste study for Damascus. Supplies and equipment were also provided and a six-month fellowship was awarded.

Syria 0059 Euphrates Pilot Irrigation Project (Health Aspects)
(1970 - 1971) UNDP/SF (FAO)

To undertake a study of general ecology and relevant health aspects of the situation in the area covered by the Euphrates pilot irrigation project, which is assisted by the United Nations Development Programme (Special Fund component) and for which FAO is the executing agency.

Syria 0062 Cutaneous Leishmaniasis (Sept. 1970) R

A consultant was provided for one week to assist in undertaking an entomological survey of the sandfly vector of cutaneous leishmaniasis and to advise on control measures.

Syria 0200 Fellowships R: Anaesthesiology (one for four months, one for six months, one for 12 months), cardiology (six months), child health (three for 12 months), clinical pathology (two for 12 months), health planning (three for 10 weeks), internal medicine (12 months), medical schools—observation visits (two months), nursing administration and education (12 months), nursing education (one for 12 months, one for 13 months), pathology (12 months), plastic surgery (six months), radiology (12 months), surgery (two months), tropical public health (10 months), tuberculosis and chest diseases (12 months), urological surgery (three months), waste disposal (two months).

Tunisia 0017 Malaria Eradication Programme
(1966 - 1972) R UNDP/TA

To eradicate malaria from the country and prevent its re-establishment. (See page 162.)

Tunisia 0018 Environmental Health Services
(1962 - 1972) UNDP/TA

To develop a national programme of environmental health and train personnel for the purpose.

Tunisia 0020 Public Health Laboratory (Oct. 1970) R

A consultant was provided for one week to assist the Ministry of Public Health in reorganizing the public health laboratories and introducing modern techniques.

Tunisia 0023 Training of Sanitarians (1970 - 1973) R

To train sanitarians for the health services.

Tunisia 0027 Medical Education (1961 -) R

To develop the medical faculty in Tunis.

Tunisia 0032 Family Planning Aspects of Maternal and Child Health Services (1970 - *beyond* 1973) UNFPA

To implement and develop the family planning programme and integrate it into the maternal and child health services, and train all categories of personnel in the pilot centre for family planning.

Tunisia 0033 Training Centre for the Repair and Maintenance of Medical Equipment (1963 - 1970) R

A technical officer was provided to assist the training centre for the repair and maintenance of medical equipment, which prepares staff for servicing the equipment in hospitals and health centres throughout the country.

Tunisia 0034 Nursing Education (1965 - 1973) R UNDP/TA

To organize courses to prepare qualified nurses for administrative, teaching and supervisory posts in nursing services and educational programmes.

Tunisia 0036 Schistosomiasis Control

(1970 - *beyond* 1972) R

To carry out an epidemiological and malacological survey of schistosomiasis, intensify control measures and train personnel.

Tunisia 0037 Vital and Health Statistics

(1968 -) UNDP/TA

To develop a system of vital and health statistics through the establishment of a permanent statistical service in the Secretariat of State for Public Health and the training of national staff in health statistics techniques.

Tunisia 0041 Community Water Supply (1970 -) R

To improve community water supplies. Under this project advice is being provided particularly in connexion with the design of distribution systems, the control of water quality and the legal, administrative and financial aspects of water management.

Tunisia 0044 Institute of Public Health (1970 - *beyond* 1974) R

To establish an institute of public health, based on the central public health laboratory (Pasteur Institute) and working in close co-operation with it.

Tunisia 0200 Fellowships R: Bacteriology (seven months), biology (10 months), cytology (12 months), drug control (six months), epidemiology (10 weeks), gynaecology (nine months), haemodialysis (six months), nephrology (12 months), nursing (12 months), ophthalmology (10 months), otorhinolaryngology (12 months), paediatrics (four for 12 months), parasitology

(10 months), pneumophthysiology (12 months), radioisotope utilization in medicine (nine months), sanitary engineering (12 months).

Tunisia 0201 Fellowships UNDP/TA: Radiology (12 months), stomatology (12 months).

United Arab Republic 0023 Malaria Eradication Programme (1965 - 1972) R

To implement antimalaria measures.

United Arab Republic 0027 High Institute of Public Health, University of Alexandria (1956 - 1972) R

To develop the High Institute of Public Health so that it may advance the training of professional health workers in all fields of public health, promote research and field work and contribute to the solution of practical health problems in the United Arab Republic.

United Arab Republic 0029 Family Planning (1970 - *beyond* 1974) UNFPA

To plan and implement the family planning programme as an integral part of the health services and train personnel in maternal and child health and family planning.

United Arab Republic 0035 Nutrition Institute (1961; 1969 - 1970) UNDP/TA

To develop the Nutrition Institute.

United Arab Republic 0040 Intensive Care Unit, Alexandria University Hospital (1970 -) R

To develop an intensive care unit at the Alexandria University Hospital.

United Arab Republic 0041 Shigella and Salmonella Survey (1969 - 1972) R

To establish a national centre for *Shigella* and *Salmonella*.

United Arab Republic 0048 Pharmaceutical Quality Control (1960 - *beyond* 1972) R

To develop the work of the laboratories for the quality control of locally manufactured and imported pharmaceutical preparations.

United Arab Republic 0049 Schistosomiasis Control Pilot Project and Training Centre (1961 - *beyond* 1972) R

To test measures for controlling schistosomiasis, so as to find those cheapest and most effective under conditions in the United Arab Republic. The project serves as a field demonstration and training centre for the Region.

United Arab Republic 0050 Nursing Education (1961 - 1972) UNDP/TA

To strengthen and expand nursing services through basic and post-basic nursing education.

United Arab Republic 0058 Physical Therapy Department, Poliomyelitis Institute, Cairo (1967 -) R

To develop the physical therapy department in the Poliomyelitis Institute, Cairo.

United Arab Republic 0059 Cairo Sewage Disposal
(1969 - 1972) R

To improve the operation and management of the Zenein sewage treatment plant and of the Cairo sewerage system in general.

United Arab Republic 0060 High Institute of Nursing, Cairo University (1965 - 1975) R

To develop a four-year degree programme in basic nursing, designed to prepare nurses for leading posts in nursing service and educational programmes.

United Arab Republic 0063 Virus Vaccine Production Centre
(1966 - *beyond* 1972) R

To set up a vaccine production centre for poliomyelitis, measles and other virus vaccines.

United Arab Republic 0064 Lake Nasser Development Centre, Aswan (Health Aspects) (1966 - 1972) UNDP/SF (FAO)

To examine the public health problems arising from environmental changes associated with the comprehensive Lake Nasser development scheme in the Aswan region, which is being carried out with assistance from the United Nations Development Programme (Special Fund component), and to suggest remedial measures.

United Arab Republic 0065 Cancer Institute, Cairo
(1967 -) R

To set up and develop new services in the Cancer Institute, Cairo University.

United Arab Republic 0073 Medical Emergency Centre
(1970 -) R

To establish medical emergency centres in the main cities, especially Cairo and Alexandria.

United Arab Republic 0074 Fluoridation of Water (Nov. 1970) R

A consultant advised on the need for and feasibility of launching a water fluoridation programme in Cairo, Alexandria and Aswan.

United Arab Republic 0100 Medical Education
(1970 - *beyond* 1972) R

To develop undergraduate and postgraduate medical education, and improve library facilities. The work will include a survey of postgraduate medical education facilities, with a view to improving their use.

United Arab Republic 0200 Fellowships R: Anaesthesiology and intensive care (six months), audiovisual aids in medical education (seven weeks), biological control of insect vectors (six months), cancer (one month), communicable disease institutes—observation visits (one week), contraceptives and hormonal balance (three months), epidemiological research (three months), glaucoma (three months), health insurance systems (one for six weeks, one for three months), health planning (10 weeks), health surveys (three months), housing and urban development (three months), liquid and dried plasma preparation (six months), periodontics (12 months), pharmaceutical education and drug research (three months), premature infant

care (two months), public health (12 months), public health administration (one for two weeks, one for four months, one for nine months), radiography of the heart by cardiac catheterization (six months), radiotherapeutic technology development by computer methods (12 months), rehabilitation (two for one month), standards and regulations of medical commissions (two months), sterilization (six months), tissue culture of *Toxoplasma gondii* (six months), tuberculosis bacteriology (three months), tuberculosis control (two weeks).

Yemen 0003 Public Health Administration
(1961 - *beyond* 1973) R

To organize public health services, and develop food hygiene and sanitation services. (The public health adviser assigned to the project helps to co-ordinate assistance provided by WHO in other fields and maintains liaison with other United Nations agencies assisting the country.)

Yemen 0006 Tuberculosis Control (1970 - 1972) R

To review the tuberculosis problem, assess the existing facilities for control, and formulate a tuberculosis control programme integrated into the basic health services.

Yemen 0008 Health Centre and Manpower Institute, Sana'a
(1956 - 1972) R UNDP/SF

To develop the Health Centre and Manpower Institute (formerly the Health Centre and Training School), Sana'a, which trains various categories of auxiliary personnel, including sanitarians, nurse/midwives and laboratory technicians, for the government health services.

Yemen 0012 Local Health Services, Taiz (1965 - 1972) R

To organize a health centre in Taiz to provide integrated health services to the community and to train various categories of auxiliary health personnel. (See page 161.)

Until 1968 this project was part of project Yemen 0015, which covered local health services for both Taiz and Hodeida.

Yemen 0015 Local Health Services, Hodeida
(1963 - *beyond* 1972) R

To organize a health centre in Hodeida to provide integrated health services to the community and to train various categories of auxiliary health personnel.

Until 1968 this project also covered local health services in Taiz—now covered by project Yemen 0012.

Yemen 0016 Smallpox Eradication (1968 - 1972) R

To carry out a programme of mass vaccination against smallpox and establish and develop a surveillance and maintenance system.

Yemen 0017 Community Water Supply and Environmental Health Services (1969 - *beyond* 1972) R

To develop the national community water supply programme, investigate and design various types of water supply systems, particularly for towns and rural areas, collect data for use in preparing requests for international or bilateral assistance, and study environmental health problems.

Yemen 0020 Organization of Medical Care
(1969 - *beyond* 1973) R

To co-ordinate and develop hospital and medical care services.

Yemen 0023 Water Supply, Sana'a and Hodeida
(1970 - 1972) UNDP/SF

To prepare a master plan and carry out preliminary engineering and feasibility studies in respect of the water supplies for Sana'a and Hodeida.

Yemen 0200 Fellowships R: Epidemiology (12 months), laboratory techniques (two for nine months, one for 11 months, two for 12 months), laboratory techniques (malaria) (10 weeks), nursing (two for 12 months), obstetrics and gynaecology (12 months), public health administration (one for five months, one for 12 months), sanitation (nine for six months), surgery (12 months), undergraduate medical studies (one for nine months, two for 10 months, 20 for 12 months), undergraduate pharmacy studies (12 months), X-ray techniques (12 months).

EMRO 0043 Advisory Services (1958 -) R

To provide countries of the Region with consultant services on subjects for which there is no regional adviser, in cases where it is impracticable to obtain assistance from headquarters staff.

EMRO 0045 Participation in Educational Meetings
(1959 - beyond 1972) R

To enable countries of the Region to participate in seminars, conferences and training courses organized in other regions and by other agencies.

EMRO 0049 Assistance to Regional Institutes (1969 - 1972) R

To assist scientific institutes in the Region which are engaged in work of importance in the field of public health, especially in education and training of medical and health personnel.

EMRO 0057 Malaria Co-ordination Meetings (1968 - 1972) R

To facilitate participation in inter-country malaria co-ordination meetings for discussion and exchange of information between national authorities responsible for malaria eradication programmes.

EMRO 0058 Malaria Eradication Evaluation Team
(1961 - 1971) R

To undertake special epidemiological studies of malaria eradication programmes, with special emphasis on areas of persisting transmission, and to promote exchange of information among and co-ordinate programme activities in neighbouring countries.

EMRO 0061 Training of Laboratory Technologists
(1962 - 1970) R

The aim was to provide advanced training for laboratory technician tutors who would occupy teaching and supervisory posts in their countries of origin.

Between October 1962 and May 1966 two two-year courses, organized in collaboration with the Government of Lebanon, were held at the central public health laboratory in Beirut. WHO provided the services of a laboratory technician, supplies and equipment, and fellowships for 22 trainees from Cyprus, Iran, Iraq, Lebanon, Libya, Pakistan, Somalia, Sudan, Syria and Yemen. All the trainees successfully completed their studies.

Between November 1967 and June 1970 three courses, organized in collaboration with the Government of Jordan, were held at the central public health laboratory, Amman. WHO provided the services of a laboratory technician for the first two courses, and of a consultant for the third, supplies and equipment, and fellowships.

The first course—in haematology, immunohaematology and serology techniques—lasted from November 1967 to August 1968 and was attended by nine trainees, including seven WHO fellows, from Ethiopia, Jordan, Pakistan, Sudan and Syria.

The second course—in bacteriology—took place between October 1968 and August 1969 and was attended by 10 WHO fellows from Ethiopia, Iraq, Jordan, Libya, Pakistan, Sudan and Syria.

The third course—in biochemistry—started in October 1969, with eight trainees from Ethiopia, Iran, Pakistan, Sudan, Syria and United Arab Republic. This course had to be interrupted in its last month; the students completed their training but did not take the final examination.

EMRO 0070 Seminar on Radiation Protection, Kuwait
(28 Feb. - 5 March 1970) R

The purpose of the seminar was to provide an opportunity for senior officers responsible for radiation protection in some of the countries of the Region to study problems associated with the development of national programmes in radiation health, the establishment of integrated central radiation protection services and the formulation of basic legislation on radiation protection. The seminar was held at the Radiotherapy and Radioisotopes Centre, Al Sabah Hospital, Kuwait. There were 27 participants from Afghanistan, Cyprus, Iran, Iraq, Jordan, Kuwait, Lebanon, Pakistan, People's Democratic Republic of Yemen, Qatar, Sudan, Syria, Tunisia, United Arab Republic and Yemen. A representative from the International Atomic Energy Agency and a guest speaker from the same organization gave lectures. The main topics discussed were (i) the nature of ionizing radiation and its effects on man; (ii) the medical use of X-rays (radiation protection aspects); (iii) the nature of radioactivity and the medical use of radioactive materials (safety considerations); (iv) radiation protection legislation; (v) public health programmes in radiation protection (experience with existing programmes); (vi) planning and development of radiological facilities; and (vii) the training of medical and auxiliary personnel in the medical use of ionizing radiation.

WHO provided a consultant and a temporary adviser and met the cost of attendance of the participants.

EMRO 0079 Advanced Training for Sanitarians
(1966 - 1973) UNDP/TA

To provide advanced training in sanitation and supervision of sanitation services, and training for experienced national sanitarians from selected countries.

EMRO 0084 Medical Education (1965 -) R

To assist countries in the Region in developing undergraduate and postgraduate medical education, and in establishing new medical faculties.

EMRO 0088 Smallpox Eradication (1967 -) R

To assist countries of the Region in the planning, implementation and assessment of their smallpox eradication programmes, and also to assist national laboratories in developing diagnostic methodology and in improving the production of freeze-dried smallpox vaccine.

EMRO 0098 Meeting of National Fellowships Officers, Alexandria (1 - 3 July 1970) R

The purpose of the meeting was to consider problems encountered in the implementation of the WHO fellowships programme in the Region and consider measures for their solution. The

meeting was attended by national fellowships officers from Afghanistan, Cyprus, Ethiopia, Iran, Iraq, Jordan, Lebanon, Libya, Pakistan, People's Democratic Republic of Yemen, Qatar, Somalia, Sudan, Syria, Tunisia, United Arab Republic and Yemen. Aspects of the programme on which recommendations were made included progress reports on fellows, medical expenses incurred by fellows during their studies, fellowship application forms, evaluation studies, and provision of information on training facilities in the Region.

WHO provided a temporary adviser and met the cost of attendance of the participants.

EMRO 0101 Medical Records Advisory Services
(1966 - *beyond* 1972) UNDP/TA

To provide advice on medical records in hospitals and health centres to countries in the Region that are developing medical records units, and to train national medical records officers.

EMRO 0111 Hospital Administration (1968 - 1972) R

To assist countries in the Region with the development of hospital administration services.

EMRO 0112 Seminar on the Place of Psychiatry in Medical Education, Alexandria (8 - 15 July 1970) R

The purpose of the seminar was to consider the teaching of psychiatry in medical schools of the Region. The discussions covered the integration of the subject in the medical curriculum, the aptitudes required of teachers and the planning of psychiatry teaching programmes. (See page 162.)

WHO provided two consultants and four temporary advisers, and met the cost of attendance of the 29 participants, who came from 12 countries of the Region.

EMRO 0119 Water Pollution Control (1968; 1970 - 1972) R

To study the increasing pollution of natural waters resulting from the discharge into them of water-borne sewage and industrial effluents.

EMRO 0121 Exchange of Professors amongst Medical Faculties and Schools of Public Health in the Region
(1969 - *beyond* 1972) R

To assist in the exchange of professors for short periods following agreements between schools.

EMRO 0128 Health Component in World Literacy Programme (1969 - 1972) R (UNESCO)

To co-operate with the UNESCO-sponsored World Literacy Programme in incorporating health components in the programme of a certain number of countries in the Region.

EMRO 0137 Group Meeting on Nursing, Nicosia
(22 - 27 June 1970) R

The purposes of the meeting were to discuss the nursing manpower needs of the Region and to study the ways of meeting them, including the contribution that WHO could make. There were 23 participants—nurses and nurse/midwives from Afghanistan, Cyprus, Ethiopia, Iran, Jordan, Kuwait, Lebanon, Libya, Pakistan, People's Democratic Republic of Yemen, Sudan, Syria and United Arab Republic. They presented a review of the nursing and midwifery situation in their respective countries.

WHO provided a consultant for six weeks, and met the cost of attendance of the participants.

EMRO 0144 Travelling Seminar on Quality Control of Pharmaceutical Preparations, Pakistan, Iran and United Arab Republic (9 - 21 March 1970) R

The purposes of the seminar were to review existing patterns of organization and operation of pharmaceutical services, and the general situation regarding quality control of pharmaceutical preparations, in the countries of the Region, and to formulate recommendations for strengthening and developing pharmaceutical services, and, in particular, pharmaceutical quality control. The seminar took place in Islamabad, Lahore and Karachi (Pakistan), Teheran (Iran) and Cairo (United Arab Republic). There were 22 participants from Afghanistan, Cyprus, Ethiopia, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Pakistan, People's Democratic Republic of Yemen, Somalia, Sudan, Syria, Tunisia, Turkey, United Arab Republic and Yemen. All were qualified pharmacists at the central level of administration or engaged in quality control work. The seminar was also attended by eight observers from Pakistan, and by some WHO staff members. In the discussions, particular attention was given to the organization, administration and technical operation of quality control services and to programmes for the education and training of personnel.

WHO provided a consultant and four temporary advisers and met the cost of attendance of the participants.

EMRO 0154 Meeting on Cholera, Teheran
(8 - 10 March 1970) R

The purpose of the meeting was to consider the prevention and control of cholera, with particular reference to border problems, measures to be taken and co-operation required. There were 22 participants—ministerial and executive officials responsible for policy on health matters—from Afghanistan, Iran, Kuwait, Pakistan, Saudi Arabia and Turkey. They made a number of recommendations, emphasizing the need for co-operation between neighbouring countries, particularly in respect of the entry of persons taking part in religious gatherings.

WHO provided a consultant and the services of staff members, and met the cost of attendance of the participants.

EMRO 0157 Rodent Control (1967 - 1973) R

To investigate problems of rodent infestation, to propose control measures and to train municipal, port and quarantine officers responsible for rodent control in the principles and practice of rodent control operations.

EMRO 0167 Special Group Meeting on Pharmacy Education, Beirut (19 - 24 Oct. 1970) R

The purpose of the meeting, which was organized in collaboration with the Government of Lebanon and the American University of Beirut and held at the University, was to consider the standardization and improvement of education in pharmacy. There were participants from nine countries of the Region. The meeting was inaugurated by the Director General of Health, and was attended by the President of the American University of Beirut and the Regional Director. Among the aspects of the subject discussed were the revision of curricula and teaching methods, physical facilities and teaching equipment, and the need for an increase in the number of faculties of pharmacy and of teaching staff in the Region. Visits were made to pharmaceutical firms, schools of pharmacy and the American University of Beirut medical centre.

WHO provided three temporary advisers and met the cost of attendance of the participants.

EMRO 0173 Survey of Medical X-ray Equipment
(1969 - 1970) R

The aims were to help countries of the Region to improve the radiological safety of patients and staff exposed to ionizing radiation in the course of diagnostic or therapeutic procedures; to advise on the maintenance and repair of medical X-ray equipment, and to assess the electrical safety of medical installations. WHO provided a technical officer and supplies and equipment.

The technical officer visited Afghanistan, Bahrain, Iraq, Qatar, Saudi Arabia and Sudan, where he checked 282 installations at 98 institutions, advised on radiation protection measures and repaired a number of X-ray units. The results of his survey were presented to the seminar on radiation protection held in Kuwait in February and March 1970. Further visits to countries were made after the seminar.

EMRO 0174 Evaluation of the Fellowships Programme
(1970 - 1972) R

To carry out evaluation studies of the WHO fellowships programme in the Region.

EMRO 0180 Communicable Eye Disease Services
(Jan. - Sept. 1970) R

An ophthalmologist visited Afghanistan, Libya, People's Democratic Republic of Yemen, and Yemen to assist in developing communicable eye disease control work integrated into the routine work of the basic health services.

EMRO 0182 Epidemiological Services (1969 - *beyond* 1972) R

To assist governments in developing their epidemiological services in order to be able to cope with epidemics or natural disasters such as earthquakes and floods.

EMRO 0186 Regional Nutrition Course for the Near East, American University of Beirut
(1970 - 1974) R UNICEF (FAO)

To train high-level government personnel from ministries of health, agriculture, planning and other ministries in various aspects of nutrition, with a view to promoting the formulation of nutrition policies and the execution of food and nutrition programmes.

EMRO 0187 Course on Electronic Data Processing in Health Services, Geneva (25 May - 3 June 1970) R

The course, which was for senior public health administrators and health statisticians at the central level, provided a general introduction to the principles and logic of electronic data processing, the physical structure of computers, and computer applications in health services and the biomedical sciences, and gave indications concerning the installation of computers, costs, staff requirements and advance preparations required. There were 14 participants from Iran, Iraq, Jordan, Kuwait, Lebanon, Pakistan, Syria and United Arab Republic, and an observer from Syria. Lectures were given by WHO staff and resource personnel dealing with electronic data processing. The course included demonstration visits to computer installations.

WHO provided a consultant and a temporary adviser and met the cost of attendance of the participants.

EMRO 0188 Regional Training Programme in Child Health and Midwifery (1970 - 1975) R

To encourage a multidisciplinary approach to the provision of preventive and curative health care for the child and the family, and to prepare nurse/midwives who are capable of teaching, administration and research in midwifery.

EMRO 0194 Integration of Family Planning Activities into Health Services (1970 -) UNFPA

To assist countries of the Region in the planning, organization, management and evaluation of family planning programmes as part of the health services, in the training of all categories of personnel and in the upgrading of institutions for training and research in human reproduction and population dynamics.

EMRO 0195 Industrial Hygiene Course, Zagreb
(Oct. 1970 - June 1971) R

To train industrial hygienists from developing countries.

EMRO 0200 Fellowships R: Syria—social paediatrics (two for three weeks).

WESTERN PACIFIC REGION

Australia 0200 Fellowships R: Cancer immunotherapy (12 months), geriatric neurology (12 months), organization of medical care (12 months), virology (six months).

British Solomon Islands Protectorate 0200 Fellowships R: Operating theatre management (12 months), public health administration (12 months).

British Solomon Islands Protectorate 0501 Malaria Pre-eradication Programme (1965 - 1969) R UNDP/TA (South Pacific Commission)

The aim of the pre-eradication programme, which followed a malaria eradication pilot project (February 1960 - June 1964), was to develop the operational, technical and administrative facilities of the malaria and public health services so that a malaria eradication programme covering the whole country could be implemented. During this phase spraying operations were continued in the original pilot area. This kept the incidence of the disease at low levels in the areas under protection, with the exception of those where there was a constant influx of parasite carriers from unprotected islands. Extensive surveys, including geographical reconnaissance, malariometric surveys and entomological investigations, were carried out. Experience gained during the spraying and surveillance operations in the protected areas showed that the difficulties to be encountered in a malaria eradication programme would be, on the one hand, of a logistic nature and, on the other, related to the shortage of qualified health manpower, particularly for assistance in surveillance and the execution of future vigilance operations. In December 1968 the Government issued a Malaria Eradication Policy White Paper which proposed that a phased malaria eradication programme should start in 1970 and be developed simultaneously with activities to expand and strengthen the basic health services.

WHO assistance included the services, for varying periods, of a malariologist, an entomologist, a sanitarian and a technical officer, fellowships and supplies and equipment.

British Solomon Islands Protectorate 0501 National Malaria Eradication Programme (1970 - 1977) R UNDP/TA

To eradicate malaria from the country. This follows the malaria pre-eradication programme started in January 1965 (see above).

British Solomon Islands Protectorate 0502 Development of Basic Health Services (1965 - 1975) UNDP/TA UNICEF

To expand and strengthen the network of local health services and train auxiliary health personnel.

Brunei 0003 Malaria Eradication Programme (1966 - 1970) R

The aim was to eradicate malaria from the country. Following a malaria pre-eradication programme which lasted from 1962 to 1965, the attack phase of the malaria eradication programme was started in 1966. As malaria had already been brought down to a relatively low level—from over 3000 cases in 1953 to 104 in 1965 and 24 in 1966—the programme entered the consolidation phase in January 1967 and in 1970 the maintenance phase, with

vigilance activities integrated in the general health services. The four cases reported in 1969 and the three in the first half of 1970 were all imported.

WHO provided a malariologist and a sanitarian from January 1966 to December 1967, consultants, fellowships and supplies and equipment.

The programme achieved its initial objective of eradicating malaria from Brunei and measures are now in force to prevent the re-establishment of the disease.

Brunei 0009 Environmental Sanitation Training (Jan. - Dec. 1970) R

To strengthen the environmental sanitation programme of the Department of Health by organizing a 12-month course to train junior health inspectors and setting up field demonstration areas in which rural sanitation methods can be developed.

Cambodia 0013 Nursing Education and Administration (1963 - 1972) R

To survey and evaluate training resources, and prepare short-term and long-term plans for meeting the nursing needs of the health services; to organize and improve nursing services and education programmes throughout the country; and to review nursing legislation, personnel policies, and terms of service.

Cambodia 0024 Environmental Health Advisory Services (1968 - 1973) R

To establish a public health engineering unit in the Ministry of Public Health and co-ordinate its work with the work of other units of the Ministry; and to draw up and implement country-wide environmental health programmes.

Cambodia 0030 Water Supply for Kompong Som (1970 - 1972) UNDP/SF

To conduct preliminary investigations for the development of a surface water supply and initiate a well-drilling programme in areas of known water yield; to review current proposals for the construction of a diversion weir on the Tuk Sap river and a transmission water line to the existing treatment plant; and to develop a programme for a full-scale project.

Cambodia 0501 Malaria Control (1962 - 1974) R UNDP/TA

To extend antimalaria activities progressively in order to protect the 2.3 million people living under malaria risk; and to promote the development of an integrated health service by training malaria personnel for the provincial and district health organization and involving the rural health services in malaria case-detection and treatment.

Cambodia 0503 Tuberculosis Control (1965 - 1975) R UNICEF

To set up the nucleus of a national tuberculosis control service with emphasis on preventive measures, and to carry out an effective control programme, so as to reduce, and finally to eliminate, tuberculosis as a major public health problem.

Cambodia 0505 Epidemiology and Health Statistics
(1966 - 1973) R

To establish in the Ministry of Public Health an epidemiological and health statistical service which will be responsible for planning and guiding national disease control programmes; to study local epidemiological patterns of prevailing causes of morbidity and mortality as a basis for the formulation of such programmes; to reorganize the health statistics systems in hospitals, health centres, dispensaries and other institutions providing health care; and to train personnel of the health services in epidemiology and health statistics.

Cambodia 0507 Health Laboratory Development
(1968 - 1973) UNDP/TA

To improve the organization and technical services of the provincial laboratories and to train staff.

Cambodia 0511 Applied Nutrition
(1967 - 1973) R UNICEF (FAO)

To improve nutritional levels in the community; to study the etiology and epidemiology of nutritional diseases and deficiencies affecting the population; to establish patterns for practical nutrition programmes that can be adapted for any part of the country; and to train national staff for their implementation and evaluation. (See page 170.)

China 0020 Mental Health Programme, Taiwan (1970) R

Two 12-month fellowships—one in clinical neurology and psychiatry and one in mental health—were awarded under this project, which was assisted by WHO between 1955 and 1968.¹

China 0034 Trachoma Control, Taiwan
(Jan. 1960 - May 1970) R UNICEF

In 1962 a trachoma control project, started eight years previously with assistance from UNICEF and WHO, was redefined, with the objectives of carrying out an island-wide study of the prevalence, distribution and relative gravity of trachoma and of the environmental and other factors influencing its transmission, and developing a comprehensive control programme based on existing health services in order to reduce trachoma to a level at which it will no longer be a major public health problem and to prevent disabling complications and sequelae.

WHO provided an epidemiologist/statistician and an ophthalmologist who assisted in organizing the project and in collecting the information needed for its evaluation, and, subsequently, consultants in epidemiology and ophthalmology, who checked up on the progress of the project and prepared for the final evaluation. Two fellowships for advanced training were awarded to counterpart personnel.

An epidemiological survey was carried out to define the nature and magnitude of the trachoma problem, indicate appropriate control methods and provide baseline data for later evaluation. The survey showed marked differences in the level of endemicity in neighbouring communities and also indicated that the risk of infection extended to the whole population, which had therefore to be covered by the control operations. A new treatment schedule, consisting of two courses of intermittent treatment, was adopted. The control programme was planned around the existing health services; case-finding examinations were carried out by local health workers and treatment was administered at home by adult members of the household and in schools by school-teachers. Temporarily recruited university workers assisted both in case-finding and in supervision of treatment. An evaluation made in 1970 showed that in the greater part of the island there had been

a reduction in both the incidence and the severity of the disease; and the change in the trachoma picture in young people, in conjunction with the socio-economic development that has taken place, suggests that the reduction in infection will be maintained and possibly accelerated. In areas where endemicity was high in 1960 and 1961, although there has been a marked reduction in active trachoma, there is still a moderate incidence, and since these are the areas that have benefited less from socio-economic development, the prospects of sustained improvement are less favourable. There is need to maintain the mass campaign in schools until the 1971-1972 school year and to intensify control efforts in 16 towns where school examinations in 1969 and 1970 showed an active trachoma rate of 10 per cent. or more.

China 0045 Leprosy Control, Taiwan (1965 - 1970) R

To establish a training and demonstration pilot project for rehabilitation of leprosy patients, and to prepare a plan for a national leprosy control programme.

China 0046 Communicable Disease Control Centre, Taiwan
(1965 - 1975) R

To set up in the provincial department of health an epidemiological service that will include laboratory facilities; to study local epidemiological patterns of prevailing causes of morbidity and mortality, in order to establish a basis for planning specific disease control programmes; and to develop procedures, suited to local conditions, for the investigation, diagnosis, control and prevention of the most prevalent communicable diseases.

China 0048 Health Education Advisory Services, Taiwan
(1970) R

A fellowship was awarded to train staff for the Health Education Division of the Provincial Health Department.

Consultant services were provided under this project in 1966, and further assistance is planned.

China 0049 Physical and Occupational Therapy, Taiwan
(1966 - 1973) R

To organize at the National Taiwan University collegiate courses for training physical therapists and occupational therapists and to improve professional standards.

China 0053 Water Pollution, Taiwan
(June - Sept. 1970) R

A consultant was provided for three months to advise the Water Pollution Control Committee on the treatment of industrial wastes for the abatement and/or control of water pollution and to make general recommendations on the organization, administration and operation of industrial waste systems.

China 0055 Nursing Administration, Taiwan (1967 - 1971) R

To strengthen the nursing division of the provincial department of health and increase its participation in the development of health programmes; to improve nursing organization, administration and supervision; to carry out studies in nursing practice; and, in collaboration with the education authorities, to improve the programmes and the practical training facilities for student nurses.

China 0057 Cheng Hsin Rehabilitation Centre, Taiwan
(Nov. 1968 - April 1969; Jan. - Nov. 1970) R

To improve the standards of the orthotics and prosthetics services given by the Cheng Hsin Rehabilitation Centre and to establish a reference workshop using the most modern techniques and equipment; to set guidelines for the training of prosthetists; to train the staff of the Centre and eventually of the other rehabi-

¹ See *Off. Rec. Wld Hlth Org.*, 180, 231.

litation stations in the country; and to assess national needs in appliance-making technicians and resources for the development of services.

WHO has provided two consultants, and further assistance is being furnished by the staff attached to the physical and occupational therapy project (China 0049).

China 0058 Industrial Health, Taiwan
(Sept. 1970 - March 1971) R

A consultant has been provided to review and develop the functions of the industrial health centres, as well as those of the appropriate departments at the central and intermediate levels of the occupational health administration system, to advise on the establishment of an occupational health and safety demonstration project, and to train industrial health personnel in industrial hygiene practices and methodology.

China 0064 Urban Environmental Planning and Control, Taiwan
(1970) UNDP/TA

Four fellowships were awarded under this project, for which a sanitary engineer was provided in 1969.¹

China 0066 Environmental Health Advisory Services, Taiwan
(1970 - 1973) R

To plan a programme for the improvement of environmental sanitation in urban and rural communities and ensure liaison among various agencies with jurisdiction over environmental health matters.

China 0067 Sewerage System Planning for the Greater Taipei Area (1969 - 1971) UNDP/SF

To assist (i) in the preparation of a master plan for sanitary sewerage for the Greater Taipei area, including interim, first stage and long-term proposals, so as to facilitate the provision of sanitary sewers and suitable means of sewage disposal in appropriate stages; (ii) in the training of local personnel in planning, design, construction supervision and management, operation and maintenance of the sewerage system; and (iii) in the preparation of related legal, organizational, managerial and financial bases for the operation of the system. (See page 169).

China 0069 Education and Training of Health Personnel, Taiwan
(1970 -) R

To provide a consolidated programme of assistance towards the education and training of health and medical workers.

Assistance formerly given to the Institute of Public Health under project China 0027, for which WHO provided consultant services and fellowships between August 1958 and December 1969, is being continued under this project.

China 0072 Maternal and Child Health Services and Family Planning Programme, Taiwan
(July - Aug. 1970) Special Account for Miscellaneous Designated Contributions

A consultant reviewed the maternal and child health and family planning services and prepared plans for the strengthening of maternal and child health and family planning services with special reference to their co-ordination and integration into the basic health services.

China 0200 Fellowships R: Child psychiatry (12 months), drug control administration (four months), food production, preparation and storage (four months), hospital administration and

public health (12 months), midwifery education (12 months), tuberculosis control (two for three months), veterinary public health (11 months), X-ray equipment maintenance and repair (three months).

Cook Islands 0200 Fellowships R: Medical studies (12 months), nursing (12 months), surgery (six months).

Fiji 0200 Fellowships R: Environmental health (six months), laboratory techniques (12 months), orthodontics (12 months), public health administration (12 months), radium handling and dosimetry (two months), tuberculosis and chest diseases (nine months).

Gilbert and Ellice Islands 0004 Nursing Education
(1964 - 1968; 1970 - 1973) UNDP/TA UNICEF

To develop training programmes for preparing nursing and midwifery personnel for the hospital and health services and to strengthen the public health nursing aspects of the basic curricula of the School of Nursing attached to the Central Colony Hospital, Tarawa.

Gilbert and Ellice Islands 0008 Communicable Diseases: Advisory Services (1968 - 1971) R

To study the epidemiology of the main communicable diseases, particularly diarrhoeal diseases, in order to determine the most appropriate measures for their control.

Gilbert and Ellice Islands 0200 Fellowships R: Family planning (three months), midwifery (public health aspects of maternal and child health care) (nine months), midwifery and public health nursing (12 months), public health administration (12 months).

Hong Kong 0017 Drug Addicts (Oct. - Nov. 1969) UNDP/TA

A consultant investigated the feasibility of carrying out a study on the relative effectiveness of various treatment and rehabilitation programmes for narcotic-dependent persons in Hong Kong.

Hong Kong 0200 Fellowships R: Dental nursing (two for 12 months), dental nursing teaching (12 months) ophthalmic nursing (nine months), public health administration (12 months).

Japan 0023 Medical Rehabilitation (1962 - 1969) R

The aims were to train, in conformity with international standards, a nucleus of senior physical and occupational therapists for teaching posts in training schools to be established, to provide facilities for training sufficient physical and occupational therapists for the medical rehabilitation programme throughout the country, and to set qualifying standards for both categories of personnel.

WHO provided consultants in 1962 and 1963 and two technical officers between 1964 and 1969, and awarded five fellowships.

Following the establishment in 1963, in temporary accommodation, of the first school for training physical and occupational therapists, permanent schools were set up and three-year curricula for both subjects were drafted and approved. Teaching aids have been acquired and teaching material is gradually being translated into Japanese. Qualified national staff have been appointed to senior teaching posts in the schools. Short courses have also been organized. A national licensing examination has been established by law and has been in operation since 1966.

The training facilities for physical and occupational therapists will be expanded and postgraduate courses will be organized. The three-year programme will eventually be replaced by a four-year programme, to fit in with other professional training programmes in Japan.

¹ See *Off. Rec. Wld Hlth Org.*, 180, 232.

Japan 0200 Fellowships R: Air pollution control (three months), community mental health care (three months), environmental pollution control (three months), food irradiation (three months), health education training systems (three months), health planning for suburban communities (three months), medical research documentation and information retrieval (three months), medical studies (refresher training) (three months), mental health (two for three months), nutrition (three months), physical therapy (12 months), sanitary engineering (one for three months, one for 12 months), social medicine (12 months), solid waste collection and disposal (three months), urbanization (public health problems) (three months), vital and health statistics (three months).

Korea 0003 Maternal and Child Health Advisory Services
(1968 - 1971) R UNICEF

To develop a national programme to strengthen maternal and child health services throughout the country as part of the general health services and to integrate family planning into the programme; also to train health personnel in maternal and child health.

Korea 0004 Leprosy Control
(Sept. - Dec. 1970) R UNICEF

A consultant was provided for three months to review the progress of the leprosy control programme assisted by WHO between 1961 and 1968.

Korea 0013 Antimalaria Programme (1962 -) R

To survey the malaria situation, organize a national malaria service and train staff, so as to enable an eradication programme to be planned and implemented.

This programme follows the pre-eradication survey that began in June 1959.

Korea 0019 Tuberculosis Control (1962 - 1973) R UNICEF

To develop an effective and comprehensive national tuberculosis control programme, so as to reduce, and finally to eliminate, the disease as a public health problem.

Korea 0021 Nursing Education (1968 - 1971) R

To develop a nursing education section in the Ministry of Education; and to formulate and implement short-term and long-term plans for strengthening and developing nursing education.

Korea 0025 Local Health Services (1963 - 1977) R UNICEF

To develop the public health services in the demonstration province (Chungchong Namdo) and the local health services in other provinces; and to train local health personnel at the Division of Training of the National Institute of Health.

Korea 0033 Epidemiology and Statistics Advisory Services
(1968 - 1978) R

To organize and develop a central epidemiological service and a disease intelligence network in the Ministry of Health and Social Affairs; to improve the collection, recording and utilization of health statistics; and to co-ordinate health laboratory services with the epidemiological services.

Korea 0034 National Health Planning (1970 - 1973) R

To formulate a national health plan within the framework of the national economic development plan, improve co-ordination between the national health planning unit and other units and

organizations concerned with health activities and train personnel in health planning techniques.

Consultant services were provided under this project between 1966 and 1969.

Korea 0041 Education and Training of Health and Medical Workers (1969 - 1974) R

To provide education and training for health and medical workers, including basic and post-basic training for physicians, nurses, sanitarians and other health workers.

Korea 0044 Pre-investment Survey of the Nakdong River Basin (1969 - 1970) UNDP/SF (FAO)

A sanitary engineer was provided for 14 months to assist with environmental health aspects of the project for a pre-investment survey of the Nakdong River Basin, which is assisted by the United Nations Development Programme (Special Fund component) and for which FAO is the executing agency. The sanitary engineer made a study of domestic and industrial water requirements in the river basin and prepared detailed forecasts for the years, 1971, 1976, 1981 and 1986.

Korea 0200 Fellowships R: BCG laboratory work (six months), environmental health (one for five weeks, one for six months), Japanese encephalitis neutralization test techniques (three weeks), X-ray techniques in tuberculosis control (two for six months).

Laos 0012 Nursing Education
(1962 - 1976) UNDP/TA UNICEF (AID) (Asia Foundation) (Colombo Plan)

To set up a school of nursing and midwifery for training personnel for the country's hospital and health services, which are to be extended and improved.

Laos 0015 Royal School of Medicine (1967 - 1978) R

To strengthen the faculty of the Royal School of Medicine.

Laos 0018 Rehabilitation of the Physically Handicapped
(1967 - 1972) UNDP/TA (United Nations Office of Technical Co-operation)

To assess the extent of the problem of the physically handicapped, plan and operate rehabilitation facilities and train staff for them, and review legislation dealing with the physically handicapped.

Laos 0027 National Health Planning
(Nov. 1970 - Feb. 1971) R

WHO is providing a consultant to review information on the needs and resources relevant to planning for health, to prepare, in the light of his findings and the progress made since his last visit (December 1966 - January 1967), guidelines on planning for health, including the immediate and long-term objectives, and to advise the Ministry of Public Health on the organization and administration of national health planning activities.

Laos 0501 Public Health Administration Advisory Services
(1969 - 1979) R

To organize, at the central level, an advisory body which will review the organization, programmes and co-ordinating mechanism of the health services, including the various forms of assistance being received by the Ministry of Health; to plan and implement by phases a programme of health service expansion throughout the country; to establish a pilot area for health service development which will be articulated with the national

social and economic development plan; and to formulate and carry out a programme for the training of the health manpower for the health and medical facilities.

Laos 0503 Development of Health Services
(1968 - 1978) UNDP/TA

To plan and develop the general health services at provincial and district levels, with particular attention to the Province of Vientiane, which will serve as a pilot area; and to assess the health manpower requirements for the pilot area and plan measures for meeting them.

Laos 0504 Malaria Control (1969 - 1978) R

To build up the administrative and operational facilities of the Central Malaria Service to the level required to carry out an antimalaria programme, in the first place in the Vientiane plain.

Laos 0505 Tuberculosis Control (April - May 1970) R

A consultant was provided to assess the tuberculosis work of the demonstration health centre in the Sikhay area, provide training in the techniques of BCG vaccination to smallpox vaccinators and maternal and child health workers, assist in the reorganization of the smallpox vaccination teams so that they can carry out BCG vaccination, and advise the national project leader on the future development of the tuberculosis control service.

Laos 0507 Environmental Health Advisory Services
(1970 - 1974) UNDP/TA

To establish a division of sanitary engineering in the Ministry of Public Health, define its functions and phase its programme of work, and to establish a protocol of liaison between the Ministry and the other ministries and governmental agencies with jurisdiction over environmental health activities.

Laos 0509 Health Laboratory Services, Vientiane
(1953 - 1975) R UNICEF

To establish a public health laboratory service and train laboratory personnel.

Laos 0511 Nutrition Advisory Services
(1968 - 1972) R UNICEF

To improve nutritional levels in the community and to co-ordinate, under a national nutrition policy, all food and nutrition work carried out by international and national governmental and non-governmental agencies.

Laos 0512 Vital and Health Statistics Advisory Services
(1968 - 1978) R

To establish a vital and health statistics service in the Ministry of Public Health and to train staff.

Laos 0513 Maternal and Child Health Services
(1959 - 1969) R UNICEF (AID) (Asia Foundation) (Tom Dooley Foundation)

The long-term objective of the project was to develop an effective maternal and child health service as part of the general health services, the immediate aims being (i) to ascertain the main maternal and child health needs, (ii) to improve and develop health services for mothers and children, and (iii) to establish training programmes for maternal and child health personnel. WHO provided a medical officer and three nurse educators and awarded fellowships.

When the project began, no organized preventive and curative care for mothers and children existed and there was an acute shortage of personnel. A maternal and child health service was set up under the Ministry of Health in 1960 with, under it, a national maternal and child health centre to provide services and training. Subsequently, maternal and child health services were set up, first in Vientiane and later in the provinces, mobile clinics were organized and a domiciliary service was established for the Vientiane area. The training of maternal and child health staff was given priority and started with a course to prepare maternal and child health nurses, who were appointed to the provincial maternal and child health centres. Refresher courses were given for rural midwives and later rural midwifery schools were set up in four provincial centres. In 1968 the training of auxiliary midwives began. Other training activities included courses for tutors and supervisors, short courses for traditional birth attendants and training in maternal and child health for medical officers. A separate budget for maternal and child health services was established in 1963; by 1969 the budgetary allocation had increased tenfold. In 1967 legislation was passed which gave recognition to the course in the provincial midwifery schools and to the inclusion of rural midwives and maternal and child health workers on the government payroll.

The immediate objectives of the project have been attained — the number of maternal and child health staff has increased, they are better trained, and the quality of services they provide has improved. The long-term objective of integrating maternal and child health services into the general health services is being pursued under the project for the development of health services, Laos 0501 (see above).

Malaysia 0020 Malaria Eradication Programme, West Malaysia
(1967 - 1979) R

To eradicate malaria from the country. This follows the malaria pre-eradication programme started in July 1964.

Malaysia 0030 Health Education Advisory Services
(Jan. - April 1970) R

WHO provided a consultant to assist in planning and organizing health education in teacher-training establishments, with particular attention to the role of schools in health work connected with community development.

Advisory services and fellowships were provided under this project between 1962 and 1968.

Malaysia 0035 Development of Health Services (Rural)
(1964 - 1978) R UNICEF

First phase (Jan. 1964 - Aug. 1968): To strengthen and expand the rural health services in East and West Malaysia and to train personnel according to a consolidated plan, which includes phasing of expansion and development of uniform standards throughout the country.

Second phase (from Sept. 1968): To undertake health practice research with a view to developing suitable methods and practices for the efficient organization and administration of the local health services. From the knowledge and experience gained, to formulate suitable recommendations for the establishment of a health policy and programme for local health services development under the second five-year development plan.

Malaysia 0040 University of Malaya (1965 - 1973) R

To strengthen the teaching staff of the Faculty of Medicine of the University of Malaya, particularly in the fields of preventive medicine, public health, nursing and medical recording.

Malaysia 0041 Environmental Health Advisory Services
(1966 - 1973) R UNICEF

To develop a national environmental health scheme, to implement sanitation projects, including water supplies for rural communities, through the health authorities and other governmental agencies, and to train sanitation staff.

Malaysia 0042 Malaria Eradication Programme, East Malaysia (Sabah) (1961 - 1974) R UNDP/TA UNICEF

To eradicate malaria from Sabah. The eradication programme follows antimalaria operations for which WHO has provided assistance since July 1955.

Malaysia 0043 Malaria Eradication Programme, East Malaysia (Sarawak) (1961 - 1974) R UNDP/TA UNICEF

To eradicate malaria from Sarawak. This follows the malaria pilot project started in 1952.

Malaysia 0055 Applied Nutrition (1967 - 1973) R (FAO)

To plan and carry out nutritional surveys in a pilot area where an applied nutrition programme is being launched, develop nutrition education and supplementary feeding programmes, and train the personnel needed for implementing and evaluating the health aspects of the programme.

Malaysia 0066 Public Health Institute
(May - July 1970) R UNICEF

A WHO consultant reviewed the organization and work of the Public Health Institute and advised on its role in health training and in research in health practice. He also reviewed training programmes in public health in the country as a whole, including field training at various levels.

Further assistance to the Institute is planned.

Malaysia 0070 Tuberculosis Control (1968 - 1971) R UNICEF

To develop a practical, comprehensive and integrated tuberculosis control service within the general public health services in all states; to train various categories of personnel for the service; to study the epidemiological patterns of tuberculosis in the country; and to continue field trials in order to find more effective methods, applicable under local conditions, for the public health control of the disease. (See page 169.)

Malaysia 0076 Organization of Medical Care
(Feb. - April 1970) R

WHO provided two consultants. The first reviewed the operating theatre facilities in the General Hospital, Johore Bahru, and suggested ways of reorganizing and improving them. The second advised on the establishment of a national hospital programme with particular reference to national, regional and local hospital planning, bed and equipment needs and the improvements required in connexion with outpatient facilities and domiciliary and ambulatory care. He also studied current and future needs for hospital legislation and the possibility of establishing regionalization of hospitals, reviewed the present resources in hospital management staff, particularly non-medical hospital administrators, and advised on training needs.

Malaysia 0080 Consultant Services for Community Water Supplies (July - Oct. 1970) R

Three consultants (in sanitary engineering, administration, and finance) made a detailed review of the short-term and long-term water supply needs of West Malaysia and reviewed current proposals for new water supply schemes and current waterworks management practices. They also made studies to determine the manpower and material resources required to carry out an

adequate development programme and organized a one-week course to familiarize engineers of the Public Works Department with aspects of waterworks management and of project development and evaluation.

Malaysia 0081 Nutrition Advisory Services (Goitre Control)
(Aug. - Nov. 1970) R

A consultant was provided to assist the Ministry of Health in the planning and implementation of surveys of endemic goitre and endemic cretinism in East and West Malaysia, and recommend methods of goitre control.

Malaysia 0200 Fellowships R: Epidemiology (12 months), health education (12 months), nursing administration (12 months).

New Hebrides 0007 Nursing Education (1969 - 1975) R

To formulate and implement short-term and long-term plans for the strengthening and development of a system of nursing education in the country.

New Hebrides 0500 Development of Health Services
(1969 - 1975) R

To plan and develop the general health services, with particular attention to the peripheral health services; to establish suitable methods and practices for the efficient operation of the rural health programme, particularly as regards maternal and child health, tuberculosis control and antimalaria and environmental sanitation work; to plan and carry out in-service training for paramedical and auxiliary personnel; and to establish field practice areas for the training of paramedical staff.

New Hebrides 0502 Malaria Control (1970 -) R

To build up the operational facilities for an antimalaria programme and organize antimalaria operations within the framework of the project for the development of health services (New Hebrides 0500).

New Zealand 0200 Fellowships R: Clinical psychologists' training and use (one month), mental health (one month), psychiatry (three months), public health administration (four months).

Niue 0200 Fellowships R: Health inspection (12 months).

Papua and New Guinea 0009 Nursing Advisory Services
(1970 - 1972) R

To strengthen the public health nursing aspects of the curricula of the schools of nursing and establish a post-basic course in public health nursing.

Papua and New Guinea 0013 Papua Medical College
(1970 - 1979) R

To strengthen the faculty of the School of Medicine (formerly the Papua Medical College) and raise the standard of teaching.

Papua and New Guinea 0200 Fellowships R: Nutrition, tropical paediatrics and public health (15 months), public health administration (two for 10 months, one for 12 months, one for 16 months), tropical medicine (six months).

Philippines 0083 Nursing Education (July - Sept. 1970) R

A consultant was provided to assess the progress made in developing a national nursing accreditation service for schools and colleges of nursing in the Philippines and to assist with surveys and evaluation studies of the schools concerned.

Consultant services were provided under this project in 1968.

Philippines 0091 University of the Philippines (1970 -) R

To strengthen the staff of the University of the Philippines, including that of the College of Medicine, the School of Dentistry, the School of Nursing of the Philippine General Hospital and the Institute of Hygiene.

Philippines 0100 Community Water Supply (1969 - 1972) UNDP/TA

To improve and extend provincial water supply systems. The work includes the review of plans for the short- and long-term extension of the water systems in certain cities and municipalities with a view to establishing criteria and good engineering practices for design and extension; the study, in general terms, of the cost of extensions and additions to existing water systems required to meet estimated demands for the immediate future and the study of various methods of financing; and the review of management, operation and maintenance practices.

Philippines 0103 Occupational Health (1970 - 1972) UNDP/TA (ILO)

To establish the legal, administrative and operational framework for a co-ordinated national programme of occupational health and safety, develop all the technical components of such a programme, including university facilities for postgraduate medical and paramedical education and training, and, on the basis of an assessment of the present situation and of projected industrial developments, plan for future expansion of occupational health and safety activities.

Philippines 0109 Workshop in Teaching Methods in Medical Education (15 - 30 April 1970) R

WHO provided three consultants to assist in the planning and operation of a national workshop on teaching methods in medical education.

Philippines 0111 Master Plan for a Sewerage System for the Manila Metropolitan Area (1966 - 1970) UNDP/SF

To prepare a master plan for a sewerage system for the Manila metropolitan area and a phased sewerage-development programme to meet the present and future requirements of the metropolitan population. The work includes the preparation of detailed financial and engineering studies for the first phase of development, which involves the construction of the most urgently needed works.

Philippines 0200 Fellowships R: Health practice research methodology (four months), industrial dental health (10 weeks), maternal and child health (12 months), occupational therapy (12 months), quarantine practices (five weeks).

Philippines 0201 Fellowships UNDP/TA: Sewerage projects (one for three months, one for six months).

Philippines 0500 General Health Services Development (1969 - 1976) R UNICEF

To strengthen, develop and promote a balanced organization and administration of the general health and medical care services; to undertake national health planning in the context of overall planning for development; to review education and training schemes for health manpower; to develop co-operative working relationships in the area of health between the national health administration and other agencies, both public and private.

Philippines 0503 Malaria Eradication Programme (1958 - 1976) R (AID)

To eradicate malaria from the country and prevent its re-establishment.

Philippines 0504 Tuberculosis Control (1963 - 1971) R UNICEF

To examine whether existing plans to control tuberculosis, based on available data, are practical and efficient under local conditions; to examine the practicability, acceptability and economic implications of standardized tuberculosis control methods comprising preventive, diagnostic and curative components; to provide facilities for training of various categories of health personnel and to obtain data on which sound planning of the integration of tuberculosis control activities into general health services could be based.

Philippines 0506 Mental Health Advisory Services (1949 - 1950; 1953; 1957 - 1960; 1963 - 1971) R

To develop a mental health programme for the whole country.

Philippines 0510 Nutrition Advisory Services (Jan. - June 1970) R

Two consultants were provided, each for six weeks. The first assisted with the overall nutrition programme being developed by the Department of Health and advised on the teaching of nutrition in schools of medicine, nursing and public health. He also helped to conduct a national nutrition seminar for senior health personnel from each of the health regions in the country. The second reviewed the work of the malnutrition wards in the National Children's Hospital and in eight other government hospitals, assisted in conducting a short course for physicians in paediatric nutrition at the National Children's Hospital, and advised on nutrition research being planned by the Hospital.

Philippines 0513 Environmental Health Advisory Services (Aug. - Nov. 1970) R

A consultant was provided to assist the Department of Health in reviewing the UNICEF-assisted water supply project and advise on any modifications required to ensure its success.

Further assistance in 1971 and 1972 is planned.

Philippines 0514 Goitre Control (May 1970) R

A consultant assisted the Department of Health in evaluating the goitre control project—the first stage of which was implemented in 1969—in studying the prevalence of endemic cretinism in selected areas, and in developing a broad plan for endemic goitre control in a pilot province.

Consultant services in the same field were provided in 1967.

Ryukyu Islands 0003 College of Health Science (1970 - 1975) R

To train paramedical personnel for the health services.

Ryukyu Islands 0005 Nursing Education (Oct. - Dec. 1970) R

A consultant was provided to advise on measures for meeting the immediate and long-term needs for nursing staff, achieving optimum utilization of nursing personnel and developing a nursing education system adapted to the country's future health service requirements.

Ryukyu Islands 0200 Fellowships R: Air pollution (six months), environmental health (six months), epidemiology (12 months), health education (two for two months), hypertension (six months), public health administration (three months), public health laboratory techniques (six months), respiratory diseases (four months), tuberculosis control (three months).

Singapore 0004 Nursing Administration and Practice (Jan. 1956 - Sept. 1970) R UNICEF

The aims were to strengthen the organization and administration of nursing services, develop educational programmes for

the preparation of administrative and supervisory nursing personnel for hospital and public health services and establish a demonstration and teaching centre that would provide integrated public health nursing services as part of a comprehensive community health programme. WHO provided six nurse educators (four in public health nursing and two in hospital nursing administration), 11 fellowships and supplies and equipment.

A public health (district) nursing service, attached to the main hospital, was established in 1956; this service also provides training in home-care nursing to basic and post-basic nursing students. Between 1957 and 1968 post-basic courses were organized in public health nursing, ward administration, paediatric nursing, psychiatric nursing, midwifery, intensive care and operating theatre techniques. These courses have contributed to raising the standard of nursing administration and patient care; however, it has not yet been possible to implement the recommendation of the nurse educators that they should be integrated into one educational unit connected with an institution of higher learning. From 1967 to 1970 a pilot centre was established in one area to provide integrated nursing services related to the maternal and child health, family planning and school health services.

Singapore 0010 School of Radiography (1970) R

A fellowship was awarded under this project, for which WHO provided long-term advisory services between 1963 and 1965.

Singapore 0011 University of Singapore
(Sept. - Dec. 1970) R

A consultant in social and preventive medicine (urban planning) assisted in strengthening the teaching programmes in the Department of Social and Preventive Medicine of the University of Singapore.

Consultant services and fellowships were provided under this project between 1962 and 1966 and again in 1968 and 1969. Further assistance is planned.

Singapore 0012 Health Education Advisory Services
(April - Sept. 1970) R UNICEF

A consultant assisted in reviewing the health education programme in schools, maternal and child health centres, training centres and institutions, and in studying the possibilities of planning a long-term programme in connexion with industrial and urbanization operations.

A health education adviser and fellowships were provided under this project between 1965 and 1968.¹

Singapore 0015 Tuberculosis Control (1968 - 1971) R

To conduct field trials on problems involved in case-finding, treatment and prevention of tuberculosis; to study the epidemiological pattern of tuberculosis in the country; to introduce a comprehensive tuberculosis control programme integrated into the general public health programme; and to provide facilities for training various categories of public health workers in tuberculosis control work.

Singapore 0017 Nutrition Advisory Services
(1970 - 1971) R (FAO)

To carry out studies on the etiology and epidemiology of nutritional disorders and their relation to general health; to work out procedures for the assessment of individual dietary intakes of the more vulnerable groups (particularly infants, young children, and pregnant and lactating women); to take measures, through health, educational and agricultural and

other channels, to improve the general food and nutritional situation in the community; and to train the necessary personnel.

A consultant (medical nutritionist) was provided under this project in 1968.

Singapore 0018 Environmental Health Advisory Services
(Feb. - March 1970) R

A consultant made a preliminary assessment of the air pollution situation and of the foreseeable future problems; he also advised on a programme of action to be undertaken in connexion with such activities as the establishment of monitoring stations and the training of personnel, made recommendations on the necessary personnel and equipment and prepared a plan for further studies.

Consultant services were provided under this project in 1968.

Singapore 0019 Haematology (Oct. - Nov. 1970) R

A consultant advised on the organization and administration of the central blood bank and haematology laboratory services of the Outram Road General Hospital and on the introduction of advanced techniques for programmes in blood diseases.

Singapore 0021 Venereal Disease Control
(Nov. 1969 - Jan. 1971) R

WHO provided two consultants. The first assessed the venereal disease problem and advised on the formulation of a venereal disease control programme, including the establishment of a central registry. The second assisted in strengthening the venereal disease serology laboratory in the bacteriology section of the Department of Pathology of the Ministry of Health, evaluated the methods used and gave the laboratory staff practical training in the classical and most advanced techniques for routine, reference and research purposes,

Singapore 0025 Urban Renewal and Development Programme
(April - June 1970) UNDP/SF (UN)

A consultant on noise control was provided for the urban renewal and development programme for which the United Nations is the executing agency. He made a general survey of the noise problem in Singapore, including noise caused by the operation of the airport, by traffic and by building construction, and suggested measures to improve the situation.

Singapore 0026 Sewage Treatment Works
(1970 - 1971) UNDP/TA

To work out an efficient and economical scheme for the management and operation of sewage treatment works, and train under-managers and chemists in operating procedures.

Singapore 0027 Sewerage Planning (1970 - 1972) UNDP/TA

To prepare a long-term master plan for the development of sewerage facilities, co-ordinated with plans for physical development, and for the expansion of the sewerage system; and to conduct studies on river and coastal water pollution, with a view to developing a programme for its abatement and control.

Singapore 0200 Fellowships R: Bacteriology (12 months), dental health services (two months), dental public health administration and dental epidemiological survey methods (12 months), medical records and hospital statistics (12 months), leprosy epidemiology (four months), nursing administration (12 months), occupational health (12 months), otolaryngology and tympanoplasty (six months), public health nursing education (12 months), pulmonary function (nine months), radiotherapy and radiography (three for four months), sports medicine (12 months).

¹ See *Off. Rec. Wld Hlth Org.*, 180, 237.

Tonga 0009 Hospital Administration (1968 -) R

To establish a medical records department, with a statistical unit, at the new general hospital in Nuku'alofa and a medical records system that can be extended to all the hospitals in the country; to train medical records personnel; and to improve hospital administration, particularly of the general hospital.

Tonga 0010 Nursing Education (1969 - 1973) R

To strengthen the basic nursing curriculum of the Queen Salote School of Nursing, improve the quality and increase the quantity of nursing and midwifery personnel for the expanding health services, and prepare nursing legislation.

Trust Territory of the Pacific Islands 0200 Fellowships R: Dental public health (two for three months, two for six months), health inspection (three for 12 months), hospital administration (12 months), ophthalmology (12 months), public health administration (12 months), public health nursing (three for six months).

Viet-Nam 0007 Tuberculosis Control (1958 - 1975) UNDP/TA UNICEF

To set up a nucleus of a national tuberculosis control service, with emphasis on measures to be integrated into general public health services; to strengthen the role of the centre in Saigon as a national tuberculosis centre; and to continue the UNICEF/WHO-assisted BCG vaccination programme on an integrated basis.

Viet-Nam 0011 Vital and Health Statistics Advisory Services (1969 - 1973) R

To organize an efficient and up-to-date system of collecting and recording vital and health statistical data so as to produce vital and health statistics which will meet national and international needs; and to train national personnel in the administration and operation of a national health statistical service.

Advisory services were provided under this project between 1960 and 1963 and again in 1966 and 1967.

Viet-Nam 0016 Malaria Pre-eradication Programme (1959 -) R (AID)

To train national staff and make preparations for the implementation of a malaria eradication programme.

Since March 1967, WHO assistance has been limited to fellowships.

Viet-Nam 0018 Health Laboratory Services (1964 - 1974) R

To establish a central health laboratory service and to train health laboratory workers; later, to organize regional and peripheral health laboratory services.

Consultant services were provided under this project in 1962.

Viet-Nam 0021 School Health (Nov. 1970 - Jan. 1971) R UNICEF

A medical officer and a public health nurse reviewed the school health services and the developments which had taken place since the assignment of a consultant in 1965 and 1966, and advised on training programmes for school health personnel which might be undertaken by the National Institute of Public Health (see project Viet-Nam 0038, below).

Viet-Nam 0026 Venereal Disease Control (1966 - 1973) R

To reduce the incidence of the venereal diseases, and strengthen and improve the syphilis serological work carried out in national laboratories.

Viet-Nam 0033 Environmental Health Advisory Services (1966 - 1974) R

To strengthen the environmental sanitation service in the Ministry of Health and introduce improvements in public water supply, human excreta disposal, refuse disposal, food hygiene and vector control in urban and rural areas.

Viet-Nam 0038 National Institute of Public Health (1969 - 1981) R Special Account for Miscellaneous Designated Contributions

To build up a national institute of public health, which will serve as a centre for the planning, standardization, organization, co-ordination, implementation and evaluation of training programmes for various categories of health and medical workers.

Consultant services were provided under this project in 1966 and 1967.

Viet-Nam 0041 Food and Drug Control (Dec. 1967 - Dec. 1969) UNDP/TA

Under this project, started under the OPEX system (United Nations programme for the provision of operational, executive and administrative personnel), an operational officer assisted the Directorate of Pharmacy in improving the biological control of pharmaceutical preparations, the bacteriological testing of antibiotics and the microbiological control of food. A pharmacist was awarded a 12-month fellowship for the study of bacteriological methods for the control of antibiotics.

In 1969, together with a WHO consultant, the operational officer assisted the Pasteur Institutes in Saigon and Nha-Trang in the production and control of freeze-dried smallpox vaccine. This assistance is continuing under the health laboratory services project Viet-Nam 0018 (see above), to which the operational officer has been transferred.

Viet-Nam 0044 Epidemiological Surveillance and Quarantine (1970 - 1973) R

To develop epidemiological services at the central and regional levels, strengthen the quarantine services and train quarantine staff.

Viet-Nam 0200 Fellowships R: Dental health (three for two weeks), public health nursing and family planning (three for six weeks), rural health and family planning (six weeks).

Western Samoa 0200 Fellowships R: Local health services development (10 weeks), medical studies (12 months), midwifery (six months), nursing (12 months), public health administration (12 months), public health laboratory techniques (12 months).

Western Samoa 0500 National Health Services Development (1967 - 1974) R

To develop and strengthen the organization and operation of the general health services, particularly at district and local levels; to improve the operation of the rural health programme; to organize in-service training for medical and paramedical personnel; to conduct epidemiological studies on the most important causes of morbidity and mortality in the country; and to plan disease control programmes as part of the general health services.

Western Samoa 0501 Filariasis Control (1965 -) R UNICEF

To determine, by a pilot project, the best way of controlling filariasis, mainly by drug treatment, in Western Samoa; to prepare a filariasis control programme for the whole country, based on the results of the pilot project; and to train staff in filariasis survey and control techniques.

Western Samoa 0504 Public Health Laboratory Services
(1967 - 1973) R UNICEF

To develop and strengthen the health laboratory services.

WPRO 0072 Malaria Eradication Training Centre, Manila
(1959 - 1961; 1963 - 1973) R (AID)

To provide training in the theory and techniques of malaria eradication for various categories of personnel needed by countries of the Western Pacific Region and other regions.

WPRO 0075 Regional Tuberculosis Advisory Team
(1961 - 1975) R UNICEF

To assist countries of the Region in assessing their tuberculosis programmes.

WPRO 0079 Advisory Services (1961 -) R

To meet requests from countries of the Region for advisory services in connexion with the planning of long-term projects or with specific problems. The following assistance was provided during the period under review:

Community Health Services. Two consultants, one in public health administration and the other in public administration, visited the British Solomon Islands Protectorate to study the organization, functions and operation of the Medical Department; to plan and conduct a management survey of its organizational units and make recommendations with regard to the structure, staffing, work organization and work process; to review the training programme for the Department's health and administrative personnel; and to assess the adequacy of the Department's programmes and targets and their relationship with the private medical sector.

Occupational Health. A consultant was provided from April to July 1970 to assist the Ministry of Health and the Department of Labour, Malaysia, in defining the administrative and organizational aspects of occupational health services, to review existing activities and to advise on their future development.

Training of Anaesthetists. A consultant reviewed the possibility of setting up a regional training centre for anaesthetists in Manila (see project WPRO 0162 below).

WPRO 0083 Public Health Advisory Services, South Pacific
(1962 - 1963; 1965 - 1980) UNDP/TA UNICEF (South Pacific Commission)

To assist countries in the South Pacific area in strengthening and developing their general health services, particular attention being given to maternal and child health work integrated into the general health services.

The project began as a maternal and child health advisory services project and its terms of reference were broadened in 1970.

WPRO 0102 Nursing Advisory Services
(June - Dec. 1970) R

Two nurse consultants visited Australia, China (Taiwan), Japan, Malaysia, Papua and New Guinea, the Republic of Korea, the Republic of Viet-Nam and the Ryukyu Islands, to determine to what extent the knowledge and skills in survey methods, and in the design and use of certain tools (i.e., sample surveys, interviews, questionnaires), acquired by the participants at the second nursing studies seminar held in 1969 were useful in studying and planning nursing resources and needs. They also assisted a group of nurses in identifying some nursing problems or areas of nursing which require studies or investigations, and advised on survey planning.

A consultant was also provided to New Zealand for three months to study the nursing education system and advise on any necessary modifications.

WPRO 0114 Participation in Educational Meetings
(1964 -) R

Between December 1969 and November 1970 the following fellowships were awarded for participation in educational meetings: (i) for the training course in epidemiology and control of communicable diseases, Prague and New Delhi—nine-month fellowships to candidates from Japan and the Philippines; (ii) for the seminar in advanced techniques for programming in tuberculosis, Norway—a two-week fellowship for a candidate from the Republic of Korea; (iii) for the seminar on methods of planning for hospitals and health care, Düsseldorf—a two-week fellowship for a candidate from the Republic of Viet-Nam; (iv) for the seminar on the use of radiological apparatus and facilities, Singapore—three two-week fellowships to candidates from Singapore; (v) for the course on public health aspects of environmental health, Japan—a four-week fellowship to a candidate from Malaysia.

WPRO 0125 Tuberculosis Course, Tokyo
(18 May - 6 Oct. 1970) R

The course, which was the fifth course on tuberculosis held in the Region, was sponsored by the Government of Japan and WHO. Its purpose was to provide assistance in training national workers in the application of modern methods of tuberculosis control. It was also designed to stimulate the provision of practical training and demonstration in national institutions. There were 18 participants from Afghanistan, China (Taiwan), Indonesia, Iran, Malaysia, Philippines, Republic of Korea, Thailand, Turkey and United Arab Republic.

WHO provided four temporary advisers, the cost of post-course country visits for all participants, two instructors (from Japan) and reference material. Five staff members served as lecturers.

WPRO 0135 Environmental Health Advisory Services, South Pacific Area (1965 - 1977) UNDP/TA

To assist countries and territories in the South Pacific area to improve community water supplies and environmental sanitation in general.

WPRO 0137 Communicable Diseases Advisory Team
(1967 - 1971) R

To assist the governments of countries and territories in the Region in assessing the general situation regarding the communicable diseases, in planning epidemiological and laboratory surveys of the most important of them, in planning and organizing control and preventive measures, and in strengthening epidemiological and laboratory services.

WPRO 0138 Public Health Nursing, South Pacific
(1967 - 1977) R

To assist countries and territories in the South Pacific area to develop public health nursing services as a part of the general health services.

WPRO 0143 Malaria Eradication Assessment Team
(1967 - 1973) R

To make independent appraisals of the status of malaria eradication and of any special aspects of the malaria programmes in the Region.

WPRO 0147 Seminar on Preparation of School-teachers for Health Education, Manila (4 - 12 Dec. 1969) R

The objectives of the seminar were to provide teacher educators and others responsible for health education in schools with an opportunity to consider the needs and problems faced, to exchange views and information, and to establish guidelines for the preparation of school-teachers for health education; to consider how pre-service, in-service and continuing education programmes for teachers can prepare them to carry out effective health education through health instruction in the classroom, the school health services, and co-operative efforts with the home and community, and how to obtain the co-operation of parents, health and medical authorities, leaders, governmental and voluntary agencies, and the public at large, in developing and strengthening health education in the school, the home and the community. There were 26 participants from Australia, British Solomon Islands Protectorate, Cambodia, China (Taiwan), Cook Islands, Fiji, Gilbert and Ellice Islands, Hong Kong, Japan, Laos, Malaysia, New Hebrides, New Zealand, Papua and New Guinea, Philippines, Republic of Korea, Republic of Viet-Nam, Singapore, Tonga and Western Samoa.

WHO provided two consultants, four temporary advisers and resource persons, and met the cost of attendance of the participants.

WPRO 0148 Applied Nutrition, Education and Training, South Pacific (1968 - 1972) R UNICEF (FAO) (South Pacific Commission)

To conduct in-service nutrition courses and/or to strengthen the teaching of nutrition in the basic training of public health and other workers in South Pacific Island territories, and to undertake surveys where necessary. The team is based in Suva and makes visits as required to other territories.

WPRO 0152 Smallpox Eradication (1969 -) R

To train national staff in the production of freeze-dried smallpox vaccine and in the laboratory diagnosis of smallpox.

WPRO 0156 Training in Maintenance of X-ray Equipment (1969 - 1972) R

To assist governments in assessing the needs for the maintenance of radiological equipment; to advise on the organization of maintenance services as part of the technical services to health and medical institutions; and to assist in organizing, directing and supervising the training of selected X-ray operators in the installation, testing, calibration, servicing and maintenance of X-ray equipment, and in the proper use of radiographic and photofluorographic equipment.

WPRO 0159 Course on National Health Planning, Manila (1 June - 28 Aug. 1970) R

The course was the third of a planned annual series designed to acquaint national health administrators from countries of the Region with the general principles of national planning for socio-economic development and to familiarize them with the principles and methods of national health planning within the framework of such development planning and as an integral part of health administration. There were 10 participants from China (Taiwan), Japan, Papua and New Guinea, Philippines, Republic of Korea, Republic of Viet-Nam and Singapore. (See page 170.)

WHO provided two consultants, honoraria for lecturers, the cost of attendance of the participants and supplies and equipment.

WPRO 0160 Dental Health Advisory Services (Oct. 1970 - Feb. 1971) R

WHO provided a consultant to China (Taiwan) to assist in the planning and implementation of a national dental epidemiological survey, advise on the analysis and presentation of results and participate in drawing up the report on the findings.

WPRO 0162 Training of Anaesthetists (1970 - 1979) R

To provide instruction and experience in the training of anaesthesiologists in order to meet the need for trained personnel in the countries of the Region.

WPRO 0164 Advisory Services on National Health Planning (1968 - 1977) R

To assist governments, not otherwise receiving long-term assistance in planning, in formulating national health and manpower plans as part of their national development plans. Areas of assistance include the various phases of planning, such as appraisal of country planning facilities, assessment of the country health situation and its projection over the planning period, formulation of health policy and development of the national health plan, programming and implementation, and evaluation and revision of country plans. The project is closely connected with that for the training of planners at the regional level (WPRO 0159). Initial steps are being taken in conjunction with that project and the general health services development project in the Philippines (Philippines 0500) to produce a field manual in health planning for developing countries in the Region desirous of undertaking long-term health planning.

WPRO 0166 Control of Pharmaceutical Substances (Oct. - Dec. 1970) R

A consultant advised the Government of Malaysia on drug registration, drug legislation and the reorganization of the drug quality control administration.

A second consultant visited China (Taiwan), the Republic of Korea, the Republic of Viet-Nam, and Singapore to study the educational standards, requirements and terms of reference established for drug quality inspectors to be employed by the national drug quality control administrations and, on the basis of his findings, advised on a course curriculum suitable for the regional training centre for drug quality inspectors that it is planned to set up in Kuala Lumpur.

WPRO 0167 Seminar on the Quality Control of Pharmaceutical Substances, Manila (12 - 20 May 1970) R

The objectives of the seminar were to review the legislative aspects of the quality control of pharmaceuticals, the functions, organization and administration of pharmaceutical quality control services, the laboratory and other technical aspects of such services and manpower and training requirements. There were 18 participants from Australia, China (Taiwan), Japan, Laos, Malaysia, New Zealand, Philippines, Republic of Korea, Republic of Viet-Nam, Ryukyu Islands, Singapore and the Trust Territory of the Pacific Islands.

WHO provided two consultants, five temporary advisers and the services of a headquarters staff member and met the cost of attendance of the participants.

WPRO 0168 Course on Vector Biology and Control, Kuala Lumpur (27 Oct. - 6 Dec. 1969) R

The objective of the course was to train national entomologists, medical officers, senior technicians and health inspectors employed in health departments on vector control, in the

latest developments in the identification of arthropods of public health importance, their bionomics and behaviour in connexion with disease transmission, and methods for their control. There were 18 participants from Australia, Brunei, China (Taiwan), Fiji, Japan, Malaysia, Republic of Korea, Republic of Viet-Nam, Ryukyu Islands, Singapore and the Trust Territory of the Pacific Islands.

The course was followed by a joint FAO/WHO regional training seminar on the control of rodents of agricultural and public health importance. This was held in Manila, Philippines, from 8 to 18 December 1969. Most of those participating in the vector biology and control course attended the seminar. In addition, there were three participants from the Philippines and one from the Republic of Viet-Nam.

WHO provided lecturers and met the cost of attendance of the participants.

WPRO 0169 Advisory Services on Water and Sewerage Programmes (1968 - 1972) R

To assist governments in carrying out studies on water supply, sewerage and other environmental health programmes, and in developing such programmes.

WPRO 0175 Joint FAO/WHO Seminar on Veterinary Public Health and Zoonoses Control, Manila (10 - 19 March 1970) R

The objectives of the seminar were to review the zoonoses situation in the Region and the relative importance that this group of diseases should have in national planning for socio-economic development; to consider the epidemiology and control of zoonoses recognized in the Region and the methodology and criteria to be used in carrying out surveillance and evaluation in accordance with resolution WHA22.35 of the Twenty-second World Health Assembly; to identify the major food-borne diseases and intoxicants in the Region, and to discuss how they are epidemiologically investigated and reported.

WHO provided consultants and temporary advisers and met the cost of attendance of the participants.

WPRO 0176 Courses on Epidemiological Surveillance and International Quarantine, Seoul and Suva (July 1970) R

The objectives of the courses were to acquaint participants with (i) the methodology of quarantine practices to be applied in airports and seaports as a result of the adoption of the new International Health Regulations at the Nineteenth World Health Assembly, (ii) the organizational structure of an international quarantine service, (iii) changing concepts of communicable disease control and (iv) the development of epidemiological surveillance methods.

The first course was held in Seoul, Republic of Korea, from 8 to 15 July and the second in Suva, Fiji, from 26 to 30 July 1970. Twenty participants from eight countries attended the first

course and 26 participants from 15 countries the second. The course programme included a consideration of quarantine practices in the participating countries; epidemiology and control, particularly of the quarantinable diseases; epidemiological surveillance; vector and rodent control; the organization of quarantine services, and a consideration of the various provisions of the International Health Regulations which will take effect in 1971. Lectures were supplemented by audio-visual aids and group discussions and field trips were conducted to observe or to demonstrate certain procedures under field conditions.

WHO provided three consultants and a temporary adviser.

WPRO 0181 Course on the Health Aspects of Population Dynamics, Manila (2 - 13 Nov. 1970) R

The course provided advanced training in interrelationship of fertility, morbidity, mortality and migration; socio-anthropological, economic and health factors influencing human reproduction and family size; problems of sterility, sub-fertility, abortion and controlled fertility; methods of fertility regulation; and family planning services as part of health services. There were 19 participants from Cambodia, China (Taiwan), Fiji, French Polynesia, Gilbert and Ellice Islands, Japan, Malaysia, Papua and New Guinea, Philippines, Republic of Korea, Republic of Viet-Nam, Ryukyu Islands, Tonga, Trust Territory of the Pacific Islands, and Western Samoa. Observers attended from the South Pacific Commission, the Economic Commission for Asia and the Far East, the Institute of Maternal and Child Health, Quezon City, and the Bureau of Public Schools, Manila.

WHO provided four consultants and the services of a staff member, and met the cost of attendance of the participants.

WPRO 0182 Seminar on the Teaching of Preventive Medicine in Medical Schools, Manila (13 - 19 Oct. 1970) R

The purpose of the seminar was to review the role of departments of preventive medicine in medical schools and to consider ways of improving the teaching of the subject. There were 16 participants from Australia, Cambodia, China (Taiwan), Fiji, Hong Kong, Japan, Malaysia, New Zealand, Papua and New Guinea, Philippines, Republic of Korea, and Singapore; and observers from the Philippines. The points discussed included the place of a community health centre in the teaching of preventive medicine, the role of departments of preventive medicine in the training of auxiliary personnel, modern teaching methods as applied to preventive medicine, the relationship of departments of preventive medicine to other departments in a medical school and to other university faculties. During the seminar a field visit was arranged to a community health centre involved in medical school teaching.

WHO provided two consultants, a temporary adviser and the services of five staff members, and met the cost of attendance of the participants.

INTER-REGIONAL

Inter-regional 0051 Field Research on Sero-epidemiology of Treponematoses (1959 -) R

To assist health administrations in the assessment of mass penicillin campaigns against the treponematoses of childhood (yaws, pinta and endemic syphilis); to advise on the epidemiological surveillance of these conditions; to undertake immunological surveys to determine low-level transmission, the danger of recrudescence, and the potential for invasion of venereal syphilis in previous treponematoses endemic areas; to participate in epidemiological research on disappearing disease and the development of methodology, in collaboration with WHO reference centres; and to furnish representative serum collections for multiple immunological studies in other WHO programmes.

Inter-regional 0052 Schistosomiasis Research Team (1967 -) R

A team, representing various disciplines (e.g., epidemiology, parasitology, ecology, malacology, medical pharmacology, biochemistry, sero-immunology, statistics, economics and social anthropology), working individually or in groups, to carry out investigations on schistosomiasis. Activities under the project include the collection and analysis of data, the stimulation of inter-regional contacts between research and control programmes, and assistance to governments and WHO operational research.

Inter-regional 0070 Malaria Eradication: Pool of Advisers (1961 -) R MESA

To make provision for malariologists and entomologists who can be assigned at short notice to assist governments in planning, implementing and evaluating eradication programmes, and to advise on particular problems.

Inter-regional 0078 Malaria Eradication: Technical Consultants (1959 -) R

To provide expert advice on the planning of malaria eradication programmes, help governments to assess such programmes and advise on special technical problems.

Inter-regional 0079 Malaria Eradication: Training Programmes (1958 -) R

To prepare international and national staff of professional and subprofessional categories for advisory, executive, and teaching responsibilities in malaria eradication projects by providing teaching aids, courses of instruction, facilities for field training, and group visits to malaria eradication programmes in operation.

Inter-regional 0110 Training Programme for French-speaking Nurses (1964 -) R

To prepare French-speaking nurses and midwives for WHO assignments in administrative and teaching posts in basic and post-basic schools of nursing and midwifery and in nursing services in various countries where the French language is used.

Inter-regional 0113.1 International Course in the Epidemiology and Control of Tuberculosis, Prague (16 April - 16 July 1970) R UNDP/TA

The ninth in a series of annual courses organized in co-operation with the Post-graduate Medical Institute, Prague, to acquaint tuberculosis workers in key positions with modern concepts of controlling the disease within the framework of the general health services and to familiarize them with up-to-date epidemiological methods. There were 13 trainees—physicians from Ceylon, India, Iran, Japan, Jordan, Kenya, Malaysia, Mongolia, Nepal, Pakistan, Philippines and Thailand. The course, which was given in English, included lectures and practical work in Prague, and was followed by a month of field training in India.

WHO provided fellowships for the trainees, lecturers (including WHO staff members), and supplies and equipment.

Inter-regional 0113.2 International Course in the Epidemiology and Control of Tuberculosis, Rome (16 Feb. - 15 May 1970) R UNDP/TA

The tenth in a series of annual courses, organized in co-operation with the Carlo Forlanini Institute, Rome, similar to that described under project Inter-regional 0113.1 above, but given in French. There were 11 trainees, from Algeria, Argentina, Cambodia, Chile, Cuba, Dahomey, People's Republic of the Congo, Peru, Republic of Viet-Nam, Romania and Rwanda. The course consisted of lecturers and practical demonstrations in and around Rome, and was followed by three weeks of field training in Turkey.

WHO provided fellowships for the trainees, lecturers (including WHO staff members), and supplies and equipment.

Inter-regional 0117 Course on Medical Rehabilitation, Beirut (3 Nov. 1969 - 30 April 1970) UNDP/TA

A description of this course was given in the Annual Report for 1969.¹

Inter-regional 0120.1 Anaesthesiology Course, Copenhagen (12 Jan. - 11 Dec. 1970) UNDP/TA

A course, similar to those that have been held yearly since 1951 at the Anaesthesiology Training Centre, Copenhagen, for training medical personnel.

WHO provided fellowships for 10 trainees from Afghanistan, Hungary, Iraq, Republic of Viet-Nam, Ryukyu Islands, Sudan, Syria, Turkey, United Arab Republic, and Yugoslavia.

Inter-regional 0156 Integrated Public Health (1962 - 1971) UNDP/TA

To provide expert services for in-service training and for assisting governments in a wide variety of public health activities, including public health administration, epidemiology, public health laboratory services and other related disciplines for an integrated approach to health assistance programmes in the developing countries.

¹ *Off. Rec. Wld Hlth Org.*, 180, 243.

Inter-regional 0172 Research on the Epidemiology and Control of Malaria in the African Savanna (1962 -) R MESA

To carry out field observations and trials to determine methods for interrupting transmission of holoendemic malaria in savanna areas of Africa.

Project Inter-regional 0212 (Field trials of new insecticides and antimalarial drugs) has been incorporated in this project.

Inter-regional 0190 Leprosy/BCG Trial Team, Burma (April 1964 - 1974) R

To carry out a trial to assess the value of BCG vaccination in the prevention of leprosy and obtain information on epidemiology, immunology, bacteriology, therapy and clinical aspects of leprosy.

Inter-regional 0228 Course on Cholera Control, India, Thailand, Hong Kong and the Philippines (16 April - 6 May 1970) UNDP/TA

The purpose of the course, which was given in English, was to provide theoretical and practical training in the various aspects of cholera epidemiology, bacteriology, diagnosis, treatment and control for clinicians, bacteriologists, epidemiologists and public health administrators from countries affected or threatened by cholera. There were 17 participants from Afghanistan, China (Taiwan), Hong Kong, India, Indonesia, Iran, Iraq, Malaysia, Nepal, Philippines, Republic of Korea, Saudi Arabia, Sudan and Thailand.

WHO provided a consultant and the services of a staff member, met the cost of attendance of the participants and contributed to the expenses of running the course.

Inter-regional 0234 Economic Commission for Africa (1964 -) R

WHO is providing a sanitary engineer to assist the Economic Commission for Africa on the environmental health aspects of its economic and social development programmes.

Inter-regional 0266 Field Investigations on Filariasis (1968 -) R

To carry out fundamental and applied research on problems of major importance in regions where filariasis is most prevalent. Investigations are made by consultants representing various disciplines (e.g., epidemiology, parasitology, medical entomology, ecology, medical pharmacology, biochemistry, serology and immunology), working individually or in groups. Where possible, emphasis is placed on problems of a priority nature. An effort is made to ensure that results obtained will be more directly applicable to control methods.

Inter-regional 0270 Anopheles Control Research Unit No. 1, Kaduna, Nigeria (1960 -) R

To carry out hut trials and village-scale field trials of new insecticides of potential value in malaria eradication and perform research on the ecology, biology and control of anopheline mosquitoes.

Inter-regional 0271 Research Unit for the Control of Mosquito Vectors of Filariasis, Rangoon (Nov. 1962 - Dec. 1969) R

The objective was the carrying out of research on the bio-nomics, ecology, vectorial capacity and insecticide susceptibility of *Culex pipiens fatigans*—the main urban vector of filariasis in South-East Asia—in order to develop effective and economical

means of controlling it by insecticidal or biological methods. WHO provided a medical officer (epidemiologist), two entomologists and a parasitologist-epidemiologist.

On the basis of the research undertaken, an organophosphorus larvicide—fenthion—was selected for use in a large-scale field trial in the Kemmendine neighbourhood of Rangoon, which was heavily infested by the vector species. Evaluation of this trial, which continued until April 1970, showed a reduction of 98.5 per cent. in positive larval habitats as compared to the check area and a concomitant reduction in adult mosquito density. Epidemiological evaluation is continuing to determine to what extent this has interrupted transmission of filariasis in the human population, which has already shown a reduced micro-filaraemia.

On the basis of the achievements, and the methodology developed by the Research Unit, a full-scale filariasis control programme, comprising both vector control and treatment of microfilaria carriers, has been started (see project Burma 0087).

Inter-regional 0276 Cholera Control Team (1964 -) UNDP/TA

A team, consisting of a clinician, a microbiologist and consultants in various specialities, to assist countries in developing and improving their programmes for the control of cholera, to assist when required in dealing with cholera epidemics, and to advise on epidemiological, laboratory and clinical aspects of control and treatment.

Inter-regional 0306 Aedes Research Unit, Bangkok (1966 -) Special Account for Medical Research

To carry out research on the ecology and population dynamics of the *Aedes* vectors of haemorrhagic fever and dengue, particularly *A. aegypti* and *A. albopictus*, with the objective of developing effective methods of interrupting transmission of these diseases; also to carry out field trials on the control of *A. aegypti*, using organophosphorus, carbamate and other insecticides and biological control procedures; and to examine new techniques which are now only at an experimental stage.

Inter-regional 0374 Community Water Supply: Consultant Services (Sept. 1965 -) UNDP/TA

To advise governments on the development of community water supplies at local and national levels. The work includes assessment of resources and needs, stimulation of the establishment of national programmes where these do not exist, advice on the technical, managerial, organizational, legislative and budgetary aspects of community water supplies, and, where necessary, assistance in the preparation of formal requests to the Special Fund component of the United Nations Development Programme for the financing of pre-investment surveys and to the International Bank for Reconstruction and Development, or other international or bilateral sources of investment funds, in connexion with the financing of water supply systems.

Inter-regional 0403 Anopheles Control Research Unit No. 2, Kisumu, Kenya (1966 -) R MESA

To carry out extended field evaluation of insecticides for use in malaria programmes.

Inter-regional 0439 Course on Health and Manpower Planning, New Delhi (12 Oct. - 27 Nov. 1970) R

The course was for teachers in medical schools or institutions providing postgraduate education in preventive and social medicine and in public health, and for professors of public health

engineering and public health nursing, and its purpose was to encourage the introduction of health and manpower planning as an integral component of the public health curriculum in their respective schools. There were 19 participants from five WHO regions (the Americas, South-East Asia, Europe, Eastern Mediterranean and Western Pacific). The course, which was held at the National Institute of Health Administration and Education, New Delhi, was designed to acquaint the participants with the multidisciplinary nature of health and manpower planning and the need for a team approach, and to give them practical experience in developing a curriculum for training professional health workers in all stages of the health planning process. The course was given in English and was mainly in the form of group discussions. It comprised three phases—health and development, health planning for development, and development of health planning curricula—during each of which several topics were considered. Educational visits in and outside Delhi were arranged.

WHO provided two consultants and met the cost of attendance of the participants.

Inter-regional 0455 Course for Teachers of Immunology in Medical Schools, Holte, Denmark

(2 - 21 March 1970) Special Account for Miscellaneous Designated Contributions

The purpose of the course was to acquaint teachers of immunology in medical schools with new developments in the field. There were 20 trainees from Bulgaria, Ceylon, Czechoslovakia, Greece, Hungary, Iran, Jamaica, Lebanon, Malaysia, Nigeria, Pakistan, Peru, Philippines, Poland, Republic of Korea, Romania, Spain, Thailand, United Arab Republic, and Yugoslavia.

WHO provided 17 temporary advisers and two staff members for the faculty of the course, and met the cost of attendance of the participants.

Inter-regional 0458 Cancer Control Advisory Team

(1968 -) R

To assist in the development of pilot projects in cancer control, including the setting-up of cancer registries, and the organization of mass screening campaigns for the early detection of cancer.

When fully constituted, the team will consist of three medical officers, one each for countries of Africa, Asia and the Americas.

Inter-regional 0467 Team for Special Studies in Virology, Africa (1968 -) R

To conduct research on virus problems, collect and disseminate information, train local personnel, provide facilities for visiting scientists, and provide limited facilities for the diagnosis of virus diseases.

Inter-regional 0469 Sanitary Engineering Centre, Rabat

(Oct. 1969 - 1978) R

To assist in developing a centre for advanced and post-graduate training of French-speaking sanitary engineers from countries of the African, European, Eastern Mediterranean and Western Pacific Regions.

Inter-regional 0473 Advanced Course in Paediatrics, Warsaw (8 Sept. - 28 Oct. 1970) R UNICEF

The purpose of the course, which was organized by the National Institute of Mother and Child, Warsaw, in collaboration with UNICEF and WHO, was to provide advanced training

to English-speaking doctors in responsible positions in maternal and child health programmes in developing countries. The course was devoted to the administration and organization of maternal and child health services and to some important problems in paediatrics, with special emphasis on its social and preventive aspects. It comprised lectures, group discussions and visits to various institutions, including rural maternal and child health centres, during which special attention was paid to practical training. The subjects covered included planning and organization of maternal and child health services, including family planning aspects, in the developing countries, socio-medical problems connected with childhood diseases, child nutrition, infection, health statistics, health education, and the evaluation of maternal and child health services.

WHO provided two consultants to teach special subjects and lead discussions; UNICEF awarded fellowships for 13 doctors from Ghana, India, Indonesia, Iran, Liberia, Mauritius, Sudan, Syria, Thailand and United Arab Republic.

Inter-regional 0474 Travelling Seminar on Plague Control, Union of Soviet Socialist Republics, and Iran

(28 May - 18 June 1970) UNDP/TA

The purpose of the seminar, which was conducted in French, was to acquaint plague workers with the microbiological, epidemiological and clinical characteristics of the disease, and with methods of work in the laboratory and the field. There were 14 participants from Afghanistan, Congo (Democratic Republic of), Iran, Mauritania, Mongolia, Morocco, Syria, Turkey and Venezuela. The seminar was held in Moscow, Stavropol and Elista (USSR) and in Teheran and Akinlu (Iran). The participants were given the opportunity to visit institutions specializing in plague research, to see demonstrations of different laboratory methods and to carry out practical work, and were able to compare the different methods used in the two countries and under different conditions.

WHO provided a consultant and two temporary advisers, met the cost of attendance of the participants, and contributed to the expenses of running the seminar.

Inter-regional 0475 Assistance to National Radiation Health Programmes (1968 -) R

To assist governments in planning and implementing radiation health programmes and in training national personnel.

Inter-regional 0478 Immunology Research Team (1967 -) R

To advise on training, organize courses in immunology and immunological techniques, and to collaborate in research and in developing regional training centres for research in immunology, especially as related to parasitic and other tropical diseases.

Inter-regional 0479 Course on Diagnostic Techniques for Haemoglobinopathies and Allied Disorders, Accra

(19 Oct. - 3 Nov. 1970) R

The purpose of the course was to train young doctors and laboratory workers in the most efficient techniques for the diagnosis of haemoglobinopathies and allied disorders at both laboratory and clinical levels. There were participants from Cameroon, Ghana, India, Iran, Liberia, Nigeria, Thailand, Togo, United Arab Republic and United Republic of Tanzania.

WHO provided six consultants and the services of a staff member and met the cost of attendance of 14 participants and of materials and documentation.

Inter-regional 0489 Refresher Course on Anaesthesiology, Copenhagen
(31 May - 20 June 1970) Special Account for Miscellaneous Designated Contributions

A course, the seventh of a series, for WHO trainees having attended one of the annual courses at the Anaesthesiology Training Centre, Copenhagen.

WHO provided three lecturers and fellowships for 14 trainees from Burma, Cyprus, Greece, India, Iran, Iraq, Japan, Jordan, Pakistan, Philippines, Ryukyu Islands, Spain, Syria and Turkey.

Inter-regional 0493 Seminar on Organization of Psychiatric Services, Union of Soviet Socialist Republics
(1 - 22 Sept. 1970) UNDP/TA

The purpose of the seminar was to enable psychiatrists and public health officers from developing countries who would be responsible for the organization of mental health services at national level to study how a network of psychiatric services has been established in urban and rural areas, its methods of functioning and its links with general health, social welfare and education services. There were 19 participants from Afghanistan, Greece, India, Iraq, Japan, Jordan, Mauritius, Mexico, Singapore, Sudan, Turkey, Uganda, United Arab Republic and United Republic of Tanzania. They visited services in Moscow, Vinnica and Leningrad, as well as in surrounding rural areas.

WHO provided a consultant and the services of two staff members, and met the cost of attendance of the participants.

Inter-regional 0496 Travelling Seminar on the Organization of Refresher Courses for Medical Staff, Union of Soviet Socialist Republics (12 - 31 Oct. 1970) UNDP/TA

The purpose of the seminar was to enable senior medical administrators to study the methods of organizing and conducting refresher courses for medical staff in the USSR. The seminar, which was conducted in French, was held in Moscow, Tbilisi, Kutaisi, Suhumi and Leningrad, and was attended by 19 medical officers engaged in postgraduate training from Bulgaria, Cambodia, Cameroon, Chile, Mali, Mongolia, Morocco, People's Republic of the Congo, Romania, Syria, Togo, Tunisia, United Arab Republic, and Uruguay.

WHO met the cost of attendance of the participants.

Inter-regional 0498 Joint FAO/WHO Training Centre for Meat Inspectors, Athi River, Kenya : Fifth Course
(20 Jan. - 20 May 1970) UNDP/TA

The purpose of the course was to train personnel from African countries in the hygienic handling and inspection of meat. In addition to covering national and international aspects of meat control, the course touched upon transport of and trade in meat, veterinary administration and animal diseases.

WHO met the cost of attendance of a participant from Ethiopia.

Inter-regional 0499 FAO/WHO/Danish Government Combined Training Centre on Meat Hygiene and Abattoir Development, Roskilde, Denmark : Fifth Course
(12 July - 22 Aug. 1970) UNDP/TA (FAO)

The purpose of the course was to enable qualified veterinarians working in the field of meat hygiene to study recent advances in the principles and practice of the hygienic production, handling, transport and distribution of meat and meat products. Special attention was paid to meat inspection, as well as to the planning, siting, construction, equipment, management and operation of abattoirs.

WHO met the cost of attendance of eight participants from Fiji, Greece, Iran, Kenya, Lebanon, Ryukyu Islands, Spain and United Republic of Tanzania, and a staff member presented lectures.

Inter-regional 0528 East African Aedes Research Unit, Dar es Salaam (1968 -) Special Account for Medical Research

To study the ecology, behaviour and distribution of the urban and peri-urban mosquito vectors of yellow fever in East Africa.

Inter-regional 0529 Research Unit on the Genetic Control of Culicine Mosquitoes, India
(1969 -) R Special Account for Medical Research

To conduct research into the feasibility of controlling *Culex fatigans* and *Aedes aegypti* on an operational scale by genetic manipulation.

Inter-regional 0537 Seminar on Methods of Epidemiological Surveillance of Communicable Diseases, Prague
(5 - 17 Oct. 1970) R

The purpose of the seminar was to enable senior epidemiologists to discuss the basic concepts and the methodology of the surveillance of communicable diseases. There were 19 participants from Afghanistan, Belgium, Ceylon, Chile, Ethiopia, Federal Republic of Germany, India, Indonesia, Japan, Jordan, Lebanon, Morocco, New Zealand, Niger, Pakistan, Philippines, Senegal and Venezuela. Experts from the Institute of Epidemiology and Microbiology, Prague, and elsewhere in Czechoslovakia assisted with the seminar, together with WHO staff members.

WHO met the cost of attendance of the participants and other expenses of the seminar.

Inter-regional 0539 Seminar on Techniques of Surveillance and Assessment in Smallpox Eradication, New Delhi
(30 Nov. - 5 Dec. 1970) R

Responsible officers for smallpox eradication programmes and WHO project staff in four countries of the South-East Asia Region and three countries of the Eastern Mediterranean Region attended the seminar, which was held in the Regional Office for South-East Asia, New Delhi. The seminar dealt specifically with the problems of countries where smallpox is endemic and which are carrying out eradication programmes, with particular emphasis on the reporting and surveillance aspects of the programmes.

WHO provided six consultants and met the cost of attendance of the 34 national participants.

Inter-regional 0546 Assistance in Epidemics (1970 -) R

To assist countries where epidemics of communicable diseases occur, or threaten to occur, by providing advice, facilities for diagnosis and assessment, emergency supplies of vaccine, and other requirements.

Inter-regional 0547 Smallpox Surveillance and Assessment Team
(1970 -) R

To carry out regular independent assessments of the individual programmes in smallpox endemic countries; to identify, as the programme progresses, the specific operational problems and assist health administrations in carrying out the programmes; to collect further information that is required for the future development of the global programme, and to conduct special epidemiological studies with a view to defining the patterns of transmission of residual smallpox, particularly with reference to nomads and other migrant groups.

Inter-regional 0548 *FAO/WHO Seminar on the Control of Echinococcosis (Hydatidosis), Buenos Aires*
(14 - 19 Sept. 1970) R (FAO)

The purpose of the seminar was to discuss recent advances in the epidemiology and field control of echinococcosis with a view to eliminating the infection from whole countries or large regions of them. Recent experience of control measures in New Zealand and Tasmania and earlier experience in Iceland were taken as basic examples.

WHO provided five temporary advisers and the services of five staff members, and met the cost of attendance of 28 participants from Argentina, Bolivia, Brazil, Bulgaria, Chile, Colombia, Cyprus, Greece, India, Italy, Kenya, Peru, Spain, Turkey, Uruguay and Yugoslavia. A temporary adviser and a staff member from FAO acted as discussion leaders.

Inter-regional 0553 *Symposium on Air Quality Criteria and Guides, Geneva* (5 - 9 Oct. 1970) R

The symposium reviewed the existing national criteria, guides and standards, and basic principles and criteria on which internationally acceptable guides for urban air pollutants could be formulated. The results of recent research on health effects of air pollutants were also reviewed, including the need for further work on pollutants on which there is as yet insufficient knowledge. Six of the most widespread air pollutants, sulfur dioxide, suspended particulate matter, carbon monoxide, oxidants, nitrogen oxides and lead, have been selected for intensive study with the aim of setting air quality criteria and guides. The symposium had 17 participants from Australia, Belgium, Canada, Czechoslovakia, Chile, Federal Republic of Germany, France, India, Israel, Italy, Japan, Netherlands, New Zealand, Sweden, Union of Soviet Socialist Republics, and United States of America, and four observers.

WHO provided two temporary advisers and met the cost of attendance of the participants.

Inter-regional 0557 and 1006 *Seminar on the Role of the Midwife in Maternal and Child Care, Kuala Lumpur*
(26 - 31 Oct. 1970) R UNFPA

The seminar, which was conducted in English, was for nurse/midwives and doctors in responsible service and teaching positions in the fields of maternal and child health, family planning, obstetrics, midwifery and public health nursing. The purpose was to review the broadening role and functions of the nurse/midwife and other categories of midwifery personnel within the framework of the general health services, especially as related to the health care of mothers and children. The subjects covered were the health needs and problems of mothers and children; the planning and organization of health services to provide essential care, including family planning care; the role and functions of midwifery personnel in the provision of care; the education and training of nurses and midwives to carry out these functions; and the health education of the public.

WHO provided four consultants and 21 fellowships to nurse/midwives and doctors from Algeria, Ceylon, Indonesia, Iran, Kenya, Liberia, Malaysia, Nigeria, Pakistan, Philippines, Turkey, Uganda and United Arab Republic.

Inter-regional 0559 *Epidemiological Research Centre, Iran*
(1968 -) R

A centre, set up by the Government of Iran in collaboration with WHO, for multidisciplinary research in epidemiology and communications science. Consultation on research between the relevant scientific organs of the Government of Iran and WHO is carried out through the centre, which proposes, implements and co-ordinates research projects, and provides research teams with the necessary technical and operational facilities.

Inter-regional 0560 *Comparative Ecological Studies on Certain Small-mammal-borne Diseases in Iran*
(May 1969 - Dec. 1970) R

The aim was to study the role of small mammals in the maintenance and transmission of various human pathogens. The work was carried out through the Epidemiological Research Centre, Iran (see project Inter-regional 0559 above). Three ecologists from WHO headquarters participated in the study; local staff and laboratory facilities were provided by the Institute of Public Health Research, University of Teheran.

In 1969 the team covered 30 localities. During 1970, 20 further collecting sites and approximately 20 000 additional specimens were examined. The data collected in 1969 and 1970 are being analysed for spatial distribution, seasonal periodicities and other ecological parameters. The results will be used to describe some ecological variables which can be used to explain the distribution of some zoonotic infections, including viral and rickettsial infections, of importance to man.

Inter-regional 0565 *Cardiovascular Research Team*
(Oct. 1968 - 1973) R

To undertake field investigations in specific areas of Africa and Asia where natural conditions are suitable for studying the etiology of ischaemic heart disease and primary diseases of the heart but where personnel for undertaking such work are lacking; and to assist in the cardiovascular research training programme. The team, which is composed of a cardiologist, an epidemiologist and a technician, works in co-operation with the WHO Research and Training Centre for Cardiovascular Diseases, Kampala, on research into the prevalence and control of valvular heart disease in primary school children in Uganda and into cardiovascular status in elderly Africans.

Inter-regional 0567 *Immunology: Courses at International Reference Centres* (1969 -) R

The second of a series of courses was given at the WHO International Reference Centre for Immunoglobulins, Lausanne, Switzerland, from 7 to 26 September 1970. It dealt with the biological aspects of antibody production and with advanced techniques in isolation, measurement and identification of different classes and subclasses of antibodies.

WHO provided the director of the course, two lecturers, three temporary advisers and fellowships for 14 trainees from Brazil, Chile, Hungary, India, Japan, Lebanon, Mexico, Nigeria, Poland, Singapore, Spain, Thailand, Union of Soviet Socialist Republics, and Yugoslavia.

Inter-regional 0568 *Teaching of Human Reproduction in Medical Schools* (1970 -) R

To advise on the teaching in medical schools of human reproduction, family planning and population dynamics, and to assist in incorporating, integrating or co-ordinating such teaching within the medical curriculum.

Inter-regional 0569 *Seminars on Advances in Physiological, Clinical and Public Health Aspects of Human Reproduction, Bangkok (Thailand) and Bangalore (India)* (12 - 22 Oct. 1970) R

The purpose of the seminars was to present, through lectures and discussion groups, recent advances in the biological, physiological, clinical and public health aspects of human reproduction, including family planning. There were 58 participants from India, six from Malaysia and 34 from Thailand. They included medical faculty members, clinicians, public health administra-

tors, medical research workers, medical students, nurses and midwives.

WHO provided three consultants, the services of a staff member, and financial assistance with expenses of local organizing committees, and met the cost of attendance of participants.

Inter-regional 0570 Symposium on Health Aspects of Human Reproduction, Family Planning and Population Dynamics, Teheran (3 - 7 Oct. 1970) R

The purpose of the symposium was to provide instruction, in the form of lectures and seminars, to officials responsible for policy-making in the field of health and family planning, and to academicians and clinicians. There were 30 participants from Afghanistan, Algeria, Iran, Lebanon, Morocco, Pakistan, Syria, Tunisia, Turkey and United Arab Republic.

WHO provided lecturers, and assistance with expenses of the local organizing committee, and met the cost of attendance of participants.

Inter-regional 0571 Course on the Methodology of Clinical Trials Involving Fertility-regulating Agents, New Delhi (1 - 14 March 1970) R Special Account for Miscellaneous Designated Contributions

The purpose of the course was to provide instruction in the design of clinical trials of fertility-regulating agents and on the reporting, tabulation and analysis of data from such trials. There were 24 trainees from Australia, India, Indonesia, Iran, Japan, Malaysia, Nepal, New Zealand, Philippines, Republic of Korea, Singapore, Thailand and United Arab Republic.

WHO provided three consultants and fellowships for the trainees.

Inter-regional 0574 and 1002 Consultant Team on Health Aspects of Family Planning (1969 -) Special Account for Miscellaneous Designated Contributions UNFPA

To develop guidelines for the provision of family planning within health services, and to build up expertise within WHO and national health administrations ensuring the multidisciplinary approach required by family planning health services.

Inter-regional 0577 Japanese Encephalitis Vector Research Unit, Republic of Korea and China (Taiwan) (1969 -) R

To investigate the distribution, density and ecology of the mosquito vectors of Japanese encephalitis, carry out observations on the epidemiology of the disease and the interrelationship between the vectors, man and animals, and investigate the reservoirs of infection.

Inter-regional 0581 Course on Epidemiology and Control of Communicable Diseases, Moscow and Alexandria (Sept. 1970 - April 1971) R UNDP/TA

The purpose of the course is to provide English-speaking fellows from developing countries with training in epidemiology and modern epidemiological methodology and health statistics, especially with regard to communicable diseases. There are 12 participants from Afghanistan, Chile, Ghana, Hungary, Japan, Malaysia, Mexico, Pakistan, Philippines, Uganda and United Arab Republic.

The course was held in Moscow from 15 September 1970 to mid-January 1971. Lecturers from the Gamaleja Institute of

Epidemiology and Microbiology, Moscow, and from other institutes in Moscow and elsewhere in the USSR assisted with the course, together with WHO staff members.

The course is continuing in Alexandria from 18 January to 18 April 1971. Diseases prevalent in the tropics and subtropics, not discussed in the Moscow part of the course, are being dealt with, and practical field training is being given.

WHO met the cost of attendance of the participants and other expenses of running the course.

Inter-regional 0592 Seminar on the Control of Biological Substances, Tokyo (19 - 24 Oct. 1970) R

The purpose of the seminar was to stimulate and assist countries to establish and develop national activities for the control of biological substances of importance in prophylactic and therapeutic medicine, and to facilitate the exchange of information on problems in the technical aspects of control—particularly those of developing countries, where facilities may be limited. There were 17 participants from Australia, China (Taiwan), Hong Kong, India, Indonesia, Iran, Iraq, Japan, Malaysia, Pakistan, Philippines, Republic of Korea, Republic of Viet-Nam, Singapore, Thailand and United Arab Republic.

WHO provided a consultant and two temporary advisers who, together with a staff member, served as teachers, met the cost of attendance of the participants and contributed to the costs of running the seminar.

Inter-regional 0598 Symposium on Quantitative Epidemiology, Moscow (23 - 27 Nov. 1970) R

The purpose of the symposium was, in general, "to explore existing mathematical theories of disease and the possibilities offered to the medical sciences by further research in this field". It was subsequently agreed, because of the extremely broad nature of these terms of reference, to limit the discussion to problems of communicable disease. The intention was to bring academic mathematical research on communicable disease in closer contact with problems of application in public health intervention and control, thus enabling the Organization to benefit from greater access to theoretical developments, while future mathematical work in universities and other research institutes would be more oriented towards practical problems. There were 19 participants from Canada, France, Japan, Romania, Union of Soviet Socialist Republics, United Kingdom and United States of America. Four WHO staff members working on mathematical modelling and epidemic theory and a staff member from the Regional Office for Europe also attended.

WHO met the cost of attendance of the participants and symposium costs.

Inter-regional 0600 Seminar on the Use of Medical Radiological Apparatus and Facilities, Singapore (9 - 21 Nov. 1970) R

The purposes of the seminar were to consider the extent to which available equipment fails, in performance or in radiation safety, to meet the needs of expanding medical and health services, particularly in developing countries, for radiological facilities; to consider how those needs can be met, especially with regard to radiation safety; and to stimulate the development of radiological apparatus and facilities better suited to requirements. There were 14 participants from Ceylon, China (Taiwan), India, Indonesia, Philippines, Singapore and Thailand, five observers from the International Electrotechnical Commission and one from the United States of America. Together with WHO staff, they discussed the problems connected with X-ray diagnosis in large regional hospitals, small district hospitals, public health

centres and rural areas of countries with different patterns of medical care services, as well as problems related to radiation protection and the maintenance and repair of equipment under different conditions. They worked out a scheme for various levels of X-ray diagnosis to meet specific conditions and needs and specified the essential equipment, staff, premises, maintenance and repair services, mains supply, etc.

WHO provided a consultant and two temporary advisers and met the cost of attendance of the participants.

Inter-regional 0601 Scientific Meeting on Biochemical Indicators of Radiation Injury to Man (IAEA/WHO), Le Vésinet, Paris (22 - 26 June 1970) R

The purposes of the meeting were to reassess the situation as regards measurement procedures for the diagnosis of the effects of radiation in man, and particularly to review the suitability of the available biochemical tests for detecting effects in man of relatively low doses of radiation. There were 19 participants—experts in biochemistry, radiobiology and radiation health—from Austria, Belgium, Canada, Czechoslovakia, Federal Republic of Germany, France, Hungary, Netherlands, Sweden, Union of Soviet Socialist Republics, United Kingdom, United States of America, and Yugoslavia, six observers from France, and representatives of the International Commission on Radiological Protection and of the European Atomic Energy Community. The participants presented and discussed the results of biochemical analysis of urine, blood and tissue samples from man and from laboratory animals after irradiation with medium and higher doses and formulated conclusions on the value of biochemical tests and on other methods for determining the effects of exposure to low doses of radiation.

WHO and IAEA provided the services of staff members and met the cost of attendance of participants.

Inter-regional 0611 Controlled Field Trials of Cerebrospinal Meningitis Vaccines (1969 - 1970) Special Account for Medical Research

To carry out field trials to assess the efficacy of new types of cerebrospinal meningitis vaccine.

Inter-regional 0615 Training in BCG Vaccine Production (1970) Special Account for Miscellaneous Designated Contributions

Three-month fellowships for training in the techniques of freeze-dried BCG vaccine production at the Statens Serum-institut, Copenhagen, were awarded to candidates from India, Senegal and Turkey.

Inter-regional 0616 Course on Control of Coastal Water Pollution, Copenhagen and Aarhus (3 - 29 Aug. 1970) Special Account for Miscellaneous Designated Contributions

The objective of the course was to train leading public health engineering personnel in methods for conducting surveys of coastal water pollution and for determining the dispersion of pollutants generated or discharged in coastal areas, and in the most appropriate forms of treatment and disposal so as to prevent or minimize the pollution of coastal waters in the vicinity of urban or industrial areas. Particular attention was given to the health aspects of coastal pollution. The course consisted of lectures on such topics as characteristics of receiving waters, sources, types and amounts of pollutants, marine biology and ecology, design and location of outfalls, and planning for water quality management, and of group discussions, practical

classes and field surveys. There were 14 participants from Brazil, Bulgaria, Ghana, India, Indonesia, Israel, Japan, Lebanon, Malta, Peru, Philippines, Turkey and United Arab Republic.

WHO provided three temporary advisers, fellowships for the participants, and 14 lecturers. Four staff members also gave lectures. A lecturer was provided by FAO and another by the International Atomic Energy Agency.

Inter-regional 0618 Course on Ecology and Control of Rodents and Flies, Beirut (14 - 30 Sept. 1970) Special Account for Miscellaneous Designated Contributions

The purpose of the course was to present the principles of and provide practical information on the biology and control of rodents (particularly urban rats) and domestic flies of public health importance, and to demonstrate modern methods of control, with special reference to conditions in the Eastern Mediterranean Region. Fourteen trainees from Afghanistan, Ethiopia, Iran, Iraq, Jordan, Lebanon, Libya, Pakistan, Qatar, Somalia, Syria, Turkey and Yemen, as well as two experts from Denmark and a lecturer from the Lebanon, attended the course.

WHO provided a consultant (lecturer) and fellowships for the trainees.

Inter-regional 0619 Course on In-service Education for Nursing Personnel, Gentofte, Denmark (5 Sept. - 17 Oct. 1970) Special Account for Miscellaneous Designated Contributions

The purpose of the course was to assist countries in promoting the improvement of nursing care in health institutions by preparing nurses in the planning, organization and conduct of in-service education programmes. Emphasis was given to the nurse's professional performance, personnel development, the organization and conduct of in-service training, and the preparation of directors of personnel and teachers responsible for in-service programmes. There were 17 participants from Argentina, Ethiopia, Hong Kong, India, Kenya, Liberia, Libya, Malaysia, Malta, Pakistan, Philippines, Romania, Somalia, Syria, Thailand, Uganda and Yugoslavia.

WHO provided two temporary advisers and met the cost of attendance of the participants.

Inter-regional 0624 Course on Quality Control of Drugs, Copenhagen (6 April - 2 May 1970) UNDP/TA

The purpose of the course was to provide training in the establishment of general principles for the quality of pharmaceutical preparations to staff of national control authorities who are dealing with quality control of drugs (inspection of manufacturing establishments, administration or laboratory work) and officials concerned with quality control in connexion with the production of drugs. The subjects covered were: the legislative basis for inspection of pharmaceutical manufacturing firms; the methodology of sampling; systems of numbering batches and storage techniques; and principles for the basic training of pharmaceutical analysts. The course included theoretical and practical instruction, discussions, and visits to laboratories, manufacturing establishments and hospital pharmacies. There were 25 participants from Argentina, Bulgaria, Chile, Ghana, India, Iran, Iraq, Jamaica, Japan, Jordan, Malaysia, Mexico, Morocco, Nepal, Nigeria, Pakistan, Philippines, Poland, Republic of Korea, Ryukyu Islands, Singapore, Thailand, Trinidad and Tobago, and United Arab Republic.

WHO provided three temporary advisers, fellowships for the participants and the services of a staff member.

Inter-regional 0626 Orientation Course in Family Welfare Planning and Human Reproduction Biology for Academic Obstetricians and Gynaecologists, New Delhi
(10 Aug. - 7 Oct. 1970) Special Account for Miscellaneous Designated Contributions

The purpose of the course, which was held at the Central Family Planning Institute, New Delhi, was to give academic obstetricians and gynaecologists a comprehensive review of recent developments in the physiological, clinical and public health aspects of human reproduction, including family planning. There were 25 participants, all from India. WHO met the cost of their attendance and provided two consultants and some supplies.

Inter-regional 0634 Travelling Seminar on Nursing, Union of Soviet Socialist Republics
(23 March - 14 April 1970) UNDP/TA

The purpose of the seminar was to enable nurses to learn about the nursing component of health services in the USSR, particularly the organization and administration of nursing services, the work of the nurse in the health services and the training of nurses. There were 19 participants from Afghanistan, Algeria, Congo (Democratic Republic of), Dahomey, Italy, Lebanon, Mexico, Morocco, Niger, Togo, Tunisia, Turkey, Upper Volta, and Uruguay. They visited Moscow, where the seminar began and ended, and also Tashkent, Namangen and Ferghana (Uzbekistan) and Baku (Azerbaijan).

WHO provided a consultant and met the cost of attendance of the participants, and three staff members assisted with the seminar.

Inter-regional 0636 Assistance to Seminar on Nutritional Problems of Pre-school Children in North Africa, Algiers
(9 - 16 Oct. 1970) R

Eight fellowships were offered for the attendance of candidates from Libya, Mauritania, Morocco and Tunisia at the above-mentioned seminar, which was organized by the Government of Algeria in co-operation with FAO, UNICEF and WHO.

Inter-regional 0653 Social and Physical Adaptation of Tokelau Island Migrants to Settlement in New Zealand
(1969 - 1971) R (New Zealand Medical Research Council)

To compare the blood pressure and other parameters in Tokelau Islanders before, during and after migration from an atoll to a New Zealand setting. Socio-cultural factors associated with migration and social stress were studied and related to these health parameters. As migration and adaptation continue, the extent of these relationships will be measured.

Inter-regional 0654 Health Effects of Urbanization, Iran
(Jan. - Dec. 1970) R

A WHO team, consisting of an epidemiologist, a sociologist, a geographer and a statistician, participated, through the Epidemiological Research Centre, Iran (see project Inter-regional 0559), in a feasibility study to determine the practicability of identifying and obtaining sample data on recent migrants from rural areas to the Teheran urban area by means of a house-to-house survey. An assessment will be made of the proportion of migrants who can be located after an interval of three to six months, a series of adaptation problems will be identified and tests will be made of a questionnaire for assessing adaptation and stress.

Local staff and facilities for the study were provided by the Institute of Public Health Research, University of Teheran.

Inter-regional 0655 Ecology of Infectious Diseases, Nyon, Switzerland (April 1970 - April 1971) R

With the primary objective of developing field and analytical methods for the study of potential contacts between certain components of model infectious cycles, to make (i) a detailed analysis of potential infection chains in a specific small-mammal population, and (ii) an initial broad geographical analysis of the potential complexity of infections through variation in latitude. In the detailed study, seasonal changes in densities, movements, reproductive rates and population structure are being determined in a mammal population near Geneva. In the broad geographical analysis, available data have been used to determine whether the complexity of infectious cycles coincides with the latitudinal variations in the number of types of organisms.

Inter-regional 0656 Social and Mental Adaptation of S  rer Migrants to Urban Life in Dakar (Jan. - Dec. 1970) R

The purpose was to study the health effects of the movement of persons from rural tribal areas into the city of Dakar. Data were collected on the sociological and demographic background of the migrants, the problems of social and psychological adjustment entailed by their migration and their health behaviour, as well as physiological indicators of health status. Special attention was paid to the adjustment process from the point of view of mental health. The study was designed and conducted by the Centre of Psychopathological Research of the University of Dakar and the Dakar Centre of the *Office de la Recherche scientifique et technique Outre-Mer*, Paris. WHO provided the assistance of an epidemiologist and a demographer/sociologist.

Inter-regional 0657 Multifactorial Prophylactic Trial in Myocardial Infarction and Cerebral Stroke in Yugoslavia
(1969 - 1970) R

A feasibility study of the variables related to intervention in a chronic disease was completed in Zagreb, Yugoslavia, using the drug treatment of blood pressure, cholesterol level and glucose tolerance as examples. A group of men between 45 and 59 years of age were screened and the rates of their acceptance of screening and of adherence to the treatment regime were studied in relation to sociological, demographic and other variables. The results are being used for the design and conduct of a study on behavioural and operational components of health intervention programmes. The study was conducted by the Andrija   tampar School of Public Health, Zagreb; WHO provided the assistance of a team composed of an epidemiologist, a sociologist and a statistician.

Inter-regional 0659 Meeting on Prevention, Treatment and Rehabilitation in Cerebrovascular Diseases, Monte Carlo
(25 - 29 May 1970) R

The purpose of the meeting were to evaluate the magnitude of and the variations in the problem of cerebrovascular disease in different parts of the world, review and stimulate application of the most recent knowledge on the treatment at the community level of patients with cerebrovascular disease, and propose the most adequate preventive measures and community programmes for prevention and treatment. There were 50 participants from Belgium, Canada, Denmark, Federal Republic of Germany, Finland, France, Israel, Japan, Luxembourg, Malta, Monaco, Netherlands, Nigeria, Romania, Singapore, Sweden, United Kingdom, United States of America Venezuela, and Yugoslavia. Recommendations were formulated concerning the treatment of persons with moderate and severe hypertension as a way of reducing the incidence of stroke in the community, the treatment of patients with acute stroke, the establishment of stroke centres

in general hospitals and of community stroke registers, and the classification of cerebrovascular diseases, as well as on further research.

WHO met the cost of attendance of 25 participants and provided supplies and equipment, and seven staff members assisted with the meeting.

Inter-regional 0660 Comprehensive Health Planning Research, Colombia

(July 1970 - June 1971) R Special Account for Medical Research PAHO (Government of Colombia)

The ultimate objective of this programme is to make the benefits of good health planning more accessible to Member States of WHO. To accomplish this a pilot project has been started in Colombia which will attempt to create, through gradual modification of an existing health planning system, an improved planning system which will utilize resources more effectively.

Inter-regional 0664 Seminar on Organization of Cholera Control Programmes, Manila

(6 - 9 Oct. 1970) Special Account for the Cholera Programme

The purpose of the seminar, which was attended by public health administrators responsible for cholera control policy, was to promote proper utilization of the resources in trained personnel and supplies in the country for the prevention and control of cholera, to discuss the relative merits and cost-benefit aspects of various cholera control measures and to provide an opportunity for discussing the attitude of various countries towards cholera control and considering what has been achieved in the way of bilateral and multilateral co-operation. There were 20 participants from Afghanistan, Burma, China (Taiwan), Hong Kong, India, Indonesia, Iran, Iraq, Japan, Malaysia, Nepal, Pakistan, Philippines, Republic of Korea, Republic of Viet-Nam, Singapore, Thailand, Union of Soviet Socialist Republics, and United Arab Republic.

WHO provided a temporary adviser and the services of four staff members, met the cost of attendance of the participants and contributed to the expenses of running the course.

Inter-regional 0668 Mathematical Aspects of Mass Health Screening (March 1970 - Dec. 1971) R

To develop several mathematical models and their corresponding computer programmes in order to improve the prediction of disease from known risk factors, identify new factors and define normal values in different populations. The techniques developed will be applied to existing studies of chronic disease and to several mass health screening projects in Europe and North America.

Inter-regional 0670 Ecological Studies of Urban Health Disorders, Hanover (Federal Republic of Germany) and Cali (Colombia) (1970 - 1971) R

To investigate the distribution and levels of health disorders (disease, disability and death) in urban areas and, by the use of techniques of spatial and social analysis, to relate to them factors of the physical and social environment. It is expected to show that the distribution of health risks in urban areas is not uniform but differentiated in terms of both prevalence levels and spatial arrangement; to obtain an understanding of the determinants of the distributions observed; to gain experience in the use of spatial and social area analysis as applied to the study of health problems; to obtain information on the

interaction of conditions having similar distribution and, eventually, to study the relationship between patterns of health disorders, population characteristics, environmental factors, and the availability and use of medical services.

Inter-regional 0674 Methodological Study on Behavioural and Operational Components of Health Intervention Programmes, Rotterdam (Netherlands) and Kaunas (Lithuanian SSR) (1970 - 1971) R

To investigate methodological problems involved in a health intervention programme, using cardiovascular diseases as the intervention vehicle, with the specific objective of ascertaining the factors that determine (i) which individuals among those identified in a population as being at risk will participate in an intervention programme, and (ii) successful adherence to the programme. Also, to develop a cost/effectiveness model to relate the costs of undertaking such a programme to the benefits in terms of the proportion of individuals at risk whose risk will be lowered by intervention.

Inter-regional 0675 Seminar on Education and Training in Occupational Health for Developing Countries, Santiago, Chile (23 Nov. - 4 Dec. 1970) UNDP/TA

The seminar was organized in co-operation with the National Institute of Occupational Health and Air Pollution Research, Santiago. Its purpose was to evaluate the need for the training of health personnel in occupational health, to propose suitable curricula at undergraduate and postgraduate levels as well as short courses, and to promote relevant field studies in the countries of participants in order to guide and supplement local training programmes. There were 22 participants and four observers from Argentina, Bolivia, Chile, Colombia, Ecuador, Ghana, Guatemala, Jamaica, Mexico, Nigeria, Peru, Uruguay and Venezuela.

WHO provided two consultants and the services of staff members and met the cost of attendance of the participants.

Inter-regional 0676 Training Course on Serological Diagnosis of Parasitic Diseases, Atlanta, Ga., United States of America (9 Nov. - 11 Dec. 1970) R UNDP/TA

The purpose of the course was to train personnel in the specialized laboratory techniques needed for carrying out the serological tests currently applied to parasitic diseases and to permit their use in different areas where these diseases are prevalent. It was held, with the collaboration of the United States Public Health Service, at the Center for Disease Control, Atlanta. There were 17 participants from Barbados, British Honduras, Ceylon, Chile, Fiji, Ghana, Hong Kong, Hungary, Indonesia, Iran, Kenya, Philippines, Republic of Korea, Sierra Leone, Thailand, United Arab Republic, and Zambia.

WHO provided four temporary advisers, the assistance, for the first two weeks, of the staff member responsible for organizing the course, and books and other supplies, and met the cost of attendance of the participants.

Inter-regional 0678 Course on Public Health Aspects of Environmental Pollution Control, Osaka, Japan (23 Nov. - 19 Dec. 1970) UNDP/TA

The purpose of the course, which was organized in co-operation with the Government of Japan, was to acquaint public health officers, sanitary engineers, scientists and teachers with current problems of environmental pollution, emphasizing the role of national health authorities in establishing environmental quality criteria, monitoring systems and control legislation.

It included lectures and discussions on health effects of environmental pollutants, air, water, land and food pollution, pesticides, environmental radiation, and noise. The course, which was conducted in English, was attended by 20 trainees from Brazil, Ceylon, China (Taiwan), Greece, India, Iran, Italy, Japan, Malaysia, Malta, Philippines, Republic of Korea, Singapore, Thailand, United Arab Republic, and Yugoslavia.

WHO provided nine temporary advisers (lecturers), a consultant, and fellowships for the participants.

Inter-regional 0733 Field Trial for General-purpose X-ray Units (1970) R

A special design for general-purpose diagnostic X-ray units has been elaborated in co-operation with industry and consultants during the last few years and a number of such units have been installed in health centres and small hospitals in rural areas in countries of several WHO regions. In 1970, seven of these units (in Greece, Kenya, Tunisia, Turkey and Yugoslavia) were visited by an inspection team, consisting of a radiologist, a medical physicist, an X-ray engineer and a specialist in supply problems, to check the conditions, use and suitability of these units. The inspection report, which will draw conclusions for further applications, is in preparation.

Inter-regional 1003 Development of Family Planning Aspects of Maternal and Child Health Activities (including "Post-partum" Approach to Family Planning) (1970 -) UNFPA

To promote family planning services as part of maternal and child health services, emphasizing the maternity-centred approach, and to improve the quality of such services.

In July 1970 a consultation was convened to give guidance to the Organization in this aspect of maternal and child health activities.

Inter-regional 1007 Priority Needs in Health Education in Family Planning (1970) UNFPA

A consultant was provided for three months to carry out a study of priority needs in health education in family planning.

Inter-regional 1009 Consultation on Health Statistics in Studies of Human Reproduction and Family Planning Programmes, Geneva (28 Sept. - 3 Oct. 1970) UNFPA

The purpose of the meeting, in which four health statisticians and four professional health workers took part, was to discuss statistical aspects of family planning and human reproduction and make recommendations on required field studies and future health statistics activities in this field.

WHO provided a consultant for one week, a temporary adviser for four weeks, and supporting services for the meeting.

Inter-regional 1019 Operations and Epidemiological Research on the Health Aspects of Population Dynamics and Family Planning (1970 -) UNFPA

To stimulate and support operational research and administrative and epidemiological studies on the health aspects of family planning and population dynamics and, by the co-ordination of such research, to increase the exchange of information between institutions.

From 8 to 11 September 1970 a consultation of investigators engaged in collaborative epidemiological studies of human reproduction was held in Gandhigram, India, to review the concepts fundamental to the study design and to co-ordinate

the methods and comparability of results. There were eight participants from India, Iran, Lebanon and Turkey.

Inter-regional 1021 Study of Levels, Trends and Differentials in Fetal, Infant and Early Childhood Mortality (1970 - 1971) UNFPA (UN)

To carry out, jointly with the United Nations, an investigation into levels, trends and differentials in fetal, infant and early childhood mortality.

Inter-regional 1022 Combined ad hoc Surveys on Fetal, Infant and Early Childhood Mortality and Fertility Patterns (1970 - 1974) UNFPA

To provide estimates of levels and differentials of fetal, infant and early childhood mortality in relation to fertility patterns and to test statistical methods and techniques suitable for carrying out the surveys in selected countries.

Inter-regional 1023 Registration of Pregnancies (1970 - 1974) UNFPA

To establish a registry of pregnancies and assess the various outcomes of these, namely, early fetal death corresponding to abortion, in addition to the usually recorded late fetal death and live birth. A pregnancy termination certificate, indicating the nature of the event and including pertinent data, will be established for use in the study.

The project is to be carried out in a few countries where most of the pregnant women receive antenatal care.

Inter-regional 1024 Evaluation of the Role of Nursing and Midwifery in Family Planning Services (1970 -) UNFPA

To evaluate the role and function of nurse and midwives in family planning services in order to determine the categories of personnel and the training required for such services, with particular reference to the extent to which nursing and midwifery personnel can integrate family planning activities within their regular programme of work.

Inter-regional 1028 Evaluation of Family Planning Activities within Health Services (1970 -) UNFPA

To assist governments in evaluating family planning activities within the context of health services, including the collection of information required for such evaluation, the development of an assessment methodology, and the implementation of field studies to test the methodology.

From 27 April to 1 May 1970 a consultation was held in Geneva to analyse available knowledge in assessment methodology in family planning programmes and to prepare a protocol for the testing and evaluation of a variety of approaches to the provision of family planning services.

Inter-regional 1029 Evaluation of Fertility Control Methods (1970 -) UNFPA

To advise responsible authorities on the conduct of clinical trials of fertility-regulating agents and the assessment of their results; to develop and carry out research on methods for the evaluation of the effectiveness, side-effects, and use of such agents; to conduct and co-ordinate clinical trials, in collaboration with local staff; and to assist in relevant training programmes.

From 21 to 23 September 1970 a consultation was held in Geneva to discuss the establishment of a field team for carrying out clinical trials with fertility-regulating agents.

Inter-regional 1030 Health Education in Family Planning Activities (1970) UNFPA

As the first phase of this project, a consultant was provided for three months, during which time he prepared a document on health education in health aspects of family planning for use by a study group on the subject. The substance of the document will support further activities under the project for development and strengthening of health education in family planning.

Inter-regional 1035 Health Education in Schools, including Family Life Education (1970) UNFPA (UNESCO)

As the first activity under this project, a consultant was provided for two months to collaborate with UNESCO in regard to school curricula in health aspects of family planning, particularly family life education, as well as in the preparation of health information and material for out-of-school youth and for teacher-training purposes.

Inter-regional 1037 Seminar on Advances in the Physiological, Clinical and Public Health Aspects of Human Reproduction, Baghdad (10 - 14 Oct. 1970) UNFPA

The purpose of the seminar was to present, through lectures and discussion groups, recent advances in the physiological,

clinical and public health aspects of human reproduction, including family planning. There were 40 participants, all from Iraq; they included medical faculty teachers, research scientists, clinicians and senior public health administrators.

WHO provided three consultants (lecturers) and financial assistance with expenses of the local organizing committee, and met the cost of attendance of participants.

Inter-regional 1048 Manual on Morbidity and Mortality Analysis (1970 - 1972) UNFPA

To prepare a manual on methods and techniques for the collection and analysis of numerical information on morbidity and mortality. The manual will deal with aspects of automatic data processing, population models in health statistics, the theory of competing risks, and other methods for evaluation of specific public health measures.

Inter-regional 1055 Research Training Grants in Human Reproduction (1970 -) UNFPA

To provide assistance for research training in the laboratory, clinical, epidemiological and public health aspects of human reproduction, family planning and population dynamics, and to facilitate exchange of research workers in these fields.

ANNEXES

Annex 1

MEMBERS AND ASSOCIATE MEMBERS OF THE WORLD HEALTH ORGANIZATION

at 31 December 1970

At 31 December 1970 the World Health Organization had 128 Member States and three Associate Members. They are listed below, with the date on which each became a party to the Constitution or the date of admission to associate membership.

Afghanistan	19 April 1948	Hungary *	17 June 1948	Philippines *	9 July 1948
Albania	26 May 1947	Iceland	17 June 1948	Poland *	6 May 1948
Algeria *	8 November 1962	India *	12 January 1948	Portugal	13 February 1948
Argentina *	22 October 1948	Indonesia	23 May 1950	Republic of Korea	17 August 1949
Australia *	2 February 1948	Iran	23 November 1946	Romania *	8 June 1948
Austria *	30 June 1947	Iraq *	23 September 1947	Rwanda *	7 November 1962
Barbados	25 April 1967	Ireland *	20 October 1947	Saudi Arabia	26 May 1947
Belgium *	25 June 1948	Israel	21 June 1949	Senegal *	31 October 1960
Bolivia	23 December 1949	Italy *	11 April 1947	Sierra Leone *	20 October 1961
Brazil *	2 June 1948	Ivory Coast *	28 October 1960	Singapore *	25 February 1966
Bulgaria *	9 June 1948	Jamaica *	21 March 1963	Somalia	26 January 1961
Burma	1 July 1948	Japan *	16 May 1951	South Africa	7 August 1947
Burundi	22 October 1962	Jordan *	7 April 1947	Spain	28 May 1951
Byelorussian SSR	7 April 1948	Kenya *	27 January 1964	Sudan	14 May 1956
Cambodia *	17 May 1950	Kuwait *	9 May 1960	Sweden *	28 August 1947
Cameroon	6 May 1960	Laos *	17 May 1950	Switzerland	26 March 1947
Canada *	29 August 1946	Lebanon	19 January 1949	Syria	18 December 1946
Central African		Lesotho *	7 July 1967	Thailand *	26 September 1947
Republic *	20 September 1960	Liberia	14 March 1947	Togo *	13 May 1960
Ceylon	7 July 1948	Libya *	16 May 1952	Trinidad and Tobago * ...	3 January 1963
Chad	1 January 1961	Luxembourg *	3 June 1949	Tunisia *	14 May 1956
Chile *	15 October 1948	Madagascar *	16 January 1961	Turkey	2 January 1948
China	22 July 1946	Malawi *	9 April 1965	Uganda	7 March 1963
Colombia	14 May 1959	Malaysia *	24 April 1958	Ukrainian SSR	3 April 1948
Congo, Democratic		Maldives *	5 November 1965	Union of Soviet	
Republic of *	24 February 1961	Mali *	17 October 1960	Socialist Republics * ...	24 March 1948
Costa Rica	17 March 1949	Malta *	1 February 1965	United Arab	
Cuba	9 May 1950	Mauritania	7 March 1961	Republic *	16 December 1947
Cyprus *	16 January 1961	Mauritius *	9 December 1968	United Kingdom of	
Czechoslovakia *	1 March 1948	Mexico	7 April 1948	Great Britain and	
Dahomey	20 September 1960	Monaco	8 July 1948	Northern Ireland *	22 July 1946
Denmark *	19 April 1948	Mongolia *	18 April 1962	United Republic	
Dominican Republic	21 June 1948	Morocco *	14 May 1956	of Tanzania *	15 March 1962
Ecuador *	1 March 1949	Nepal *	2 September 1953	United States of America	21 June 1948
El Salvador	22 June 1948	Netherlands *	25 April 1947	Upper Volta *	4 October 1960
Ethiopia	11 April 1947	New Zealand *	10 December 1946	Uruguay	22 April 1949
Federal Republic		Nicaragua *	24 April 1950	Venezuela	7 July 1948
of Germany *	29 May 1951	Niger *	5 October 1960	Viet-Nam	17 May 1950
Finland *	7 October 1947	Nigeria *	25 November 1960	Western Samoa	16 May 1962
France	16 June 1948	Norway *	18 August 1947	Yemen	20 November 1953
Gabon	21 November 1960	Pakistan *	23 June 1948	Yugoslavia *	19 November 1947
Ghana *	8 April 1957	Panama	20 February 1951	Zambia	2 February 1965
Greece	12 March 1948	Paraguay	4 January 1949		
Guatemala *	26 August 1949	People's Democratic			
Guinea *	19 May 1959	Republic of Yemen	6 May 1968		
Guyana	27 September 1966	People's Republic			
Haiti *	12 August 1947	of the Congo	26 October 1960		
Honduras	8 April 1949	Peru	11 November 1949		

Associate Members

Bahrain	8 May 1968
Qatar	5 March 1964
Southern Rhodesia ¹	16 May 1950

* Member States that have acceded to the Convention on the Privileges and Immunities of the Specialized Agencies and its Annex VII.

¹ Southern Rhodesia's associate membership is regarded as in suspense.

Annex 2

MEMBERSHIP OF THE EXECUTIVE BOARD

1. Forty-fifth Session (Geneva, 20-29 January 1970)

	<i>Designated by</i>		<i>Designated by</i>
Dr J. ANOUTI	Lebanon	Dr B. JURICIC	Chile
Dr D. ARNAUDOV	Bulgaria	Dr I. S. KADAMA, <i>Vice-Chairman</i>	Uganda
Dr A. BARRAUD	Upper Volta	Dr H. M. EL-KADI, <i>Rapporteur</i>	United Arab Republic
Dr S. BÉDAYA NGARO	Central African Republic	Dr M. EL KAMAL, <i>Rapporteur</i>	Algeria
Dr S. P. EHRLICH, jr	United States of America	Dr B. D. B. LAYTON	Canada
Sir George GODBER	United Kingdom of Great Britain and Northern Ireland	Professor L. VON MANGER-KOENIG	Federal Republic of Germany
Dr E. GONZÁLEZ GÁLVEZ	Panama	Professor I. MORARU, <i>Vice-Chairman</i>	Romania
Professor J. F. GOOSSENS	Belgium	Dr K. B. N'DIA ¹	Ivory Coast
Dr C. K. HASAN	Pakistan	Sir William REFSHAUGE, <i>Chairman</i>	Australia
Dr Y. R. JOSHI	Nepal	Professor B. REXED	Sweden
		Dr S. P. W. STREET	Jamaica
		Dr G. TUVAN	Mongolia
		Dr V. P. VASSILOPOULOS	Cyprus
		Professor K. YANAGISAWA	Japan

2. Forty-sixth Session (Geneva, 25-26 May 1970)

The Twenty-third World Health Assembly in resolution WHA23.3 elected Austria, Ethiopia, France, Kenya, Laos, Nicaragua, Saudi Arabia, and the Union of Soviet Socialist Republics to designate persons to serve on the Board in place of the retiring members—designated by Australia, the Federal Republic of Germany, Ivory Coast, Pakistan, Panama, Romania, Sweden, and the United Arab Republic. This resulted in the following composition of the Board at the forty-sixth session:

	<i>Designated by</i>	<i>Unexpired term of office at the time of closure of the Twenty-third World Health Assembly</i>
Dr H. ABDUL-GHAFFAR	Saudi Arabia	3 years
Dr J. ANOUTI, <i>Vice-Chairman</i>	Lebanon	1 year
Dr D. ARNAUDOV	Bulgaria	2 years
Professor E. J. AUJALEU	France	3 years
Dr O. AVILÉS	Nicaragua	3 years
Dr A. BARRAUD	Upper Volta	2 years
Dr F. A. BAUHOFFER	Austria	3 years
Dr S. BÉDAYA NGARO, <i>Rapporteur</i>	Central African Republic	2 years
Dr A. BENADOUDA	Algeria	2 years
Dr S. P. EHRLICH, jr	United States of America	2 years
Sir George GODBER ²	United Kingdom of Great Britain and Northern Ireland	1 year
Professor J. F. GOOSSENS	Belgium	1 year
Dr Y. R. JOSHI	Nepal	2 years
Dr B. JURICIC, <i>Chairman</i>	Chile	1 year
Dr I. S. KADAMA	Uganda	1 year
Dr B. D. B. LAYTON, <i>Vice-Chairman</i>	Canada	1 year
Dr Z. ONYANGO	Kenya	3 years
Mr H. SEBSIBE	Ethiopia	3 years
Dr O. SOUVANNAVONG	Laos	3 years
Dr S. P. W. STREET	Jamaica	1 year
Dr G. TUVAN ³	Mongolia	1 year
Dr V. P. VASSILOPOULOS, <i>Rapporteur</i>	Cyprus	2 years
Dr D. D. VENEDIKTOV ⁴	Union of Soviet Socialist Republics	3 years
Professor K. YANAGISAWA	Japan	2 years

¹ Unable to attend.

² Dr G. Wynne Griffith, alternate, attended the session.

³ Dr P. Dolgor, alternate, attended the session.

⁴ Dr O. P. Ščepin, alternate, attended the session.

Annex 3

ORGANIZATIONAL AND RELATED MEETINGS IN 1970

Executive Board, forty-fifth session: Standing Committee on Administration and Finance	Geneva, 12-19 January
Executive Board, forty-fifth session	Geneva, 20-29 January
Executive Board, forty-fifth session: Standing Committee on Non-governmental Organizations	Geneva, 22 and 26 January
Executive Board: Committee on Arrears of Contributions in respect of the Office International d'Hygiène Publique	Geneva, 27 January
Executive Board: Ad Hoc Committee	Geneva, 4 and 8 May
Twenty-third World Health Assembly	Geneva, 5-22 May
Executive Board, forty-sixth session	Geneva, 25-26 May
Regional Committee for the Western Pacific, twenty-first session	Manila, 1-8 September
Regional Committee for Africa, twentieth session	Accra, 9-15 September
Regional Committee for the Eastern Mediterranean: Sub-Committee A	Brummana (Lebanon), 21-24 September
Regional Committee for Europe, twentieth session	Valletta, 22-26 September
Regional Committee for South-East Asia, twenty-third session	New Delhi, 22-28 September
Regional Committee for the Americas, twenty-second session / XVIII Pan American Sanitary Conference	Washington, D.C., 28 September - 8 October

Annex 4

EXPERT ADVISORY PANELS AND COMMITTEES

1. EXPERT ADVISORY PANELS

The expert advisory panels in existence at 31 December 1970 were on the following subjects:

Air pollution	Health laboratory services	Nursing
Antibiotics	Health of seafarers	Nutrition
Bacterial diseases	Health statistics	Occupational health
Biological standardization	Human genetics	Organization of medical care
Biology of human reproduction	Immunology	Parasitic diseases
Brucellosis	Insecticides	Professional and technical education of medical and auxiliary personnel
Cancer	International pharmacopoeia and phar- maceutical preparations	Public health administration
Cardiovascular diseases	International surveillance of communi- cable diseases	Rabies
Chronic degenerative diseases	Leprosy	Radiation
Dental health	Malaria	Rehabilitation
Drug dependence	Maternal and child health	Trachoma
Environmental health	Medical research ¹	Tuberculosis
Food additives	Mental health	Venereal infections and treponematoses
Food hygiene		Virus diseases
Health education		Zoonoses

¹ See resolution WHA12.17.

2. EXPERT COMMITTEES

The membership of the expert committees that met in 1970 was as follows:

WHO Expert Committee on Nonproprietary Names for Pharmaceutical Substances

Geneva, 22-25 April

Professor T. Itai, Secretary, Society of the Japanese Pharmacopoeia, Tokyo, Japan

Dr J. B. Jerome, Assistant Director, Department of Drugs, American Medical Association, Chicago, Ill., USA

Mr G. R. Kitteringham, Secretary, British Pharmacopoeia Commission, London, England

Professor P. Lechat, Director, Pharmacological Institute, Faculty of Medicine, University of Paris, France

Dr K. Schriever, Professor of Chemistry and Teaching Methods in Chemistry, Pedagogische Hochschule Rheinland, Bonn, Federal Republic of Germany

Professor V. V. Zakusov, Director, Institute of Pharmacology, Academy of Medical Sciences of the USSR, Moscow, USSR

Dr P. H. Connell, Director, Drug Dependence Clinical Research and Treatment Unit, The Bethlem Royal and The Maudsley Hospital, London, England

Dr N. B. Eddy, Consultant on Narcotics, National Institutes of Health, Bethesda, Md., USA

Dr K. Evang, Director-General of Health Services, Directorate of Health, Oslo, Norway

Dr L.-M. Gunne, Head, Psychiatric Research Centre, Ulleråker Hospital, Uppsala, Sweden

Dr J. J. C. Jacob, Chief, Pharmacology and Toxicology Service, Institut Pasteur, Paris, France

Dr T. A. Lambo, Vice-Chancellor and Professor of Psychiatry, University of Ibadan, Nigeria

Dr Komol Pengsritong, Deputy Under-Secretary of State for Public Health, Bangkok, Thailand

Dr O. Vinař, Chief, Department of Psychopharmacology, Psychiatric Research Institute, Prague, Czechoslovakia

WHO Expert Committee on Leprosy¹

Geneva, 9-15 June

Dr C. H. Binford, Medical Director, Leonard Wood Memorial, Washington, D.C., USA

Dr J. Convit, Chief, Division of Dermatology, Ministry of Health and Social Welfare, Caracas, Venezuela

Dr C. G. S. Iyer, Director, Central Leprosy Teaching and Research Institute, Chingleput, Madras, India

Médecin-Général J. Languillon, Director, Marchoux Institute, Bamako, Mali

Dr C. C. Shepard, Chief, Leprosy and Rickettsial Diseases Unit, Virology Section, National Communicable Disease Center, Atlanta, Ga., USA

Dr N. A. Torsuev, Director, Skin and Venereal Diseases Clinic, Donetsk National Medical Institute, Donetsk, Ukrainian SSR

Dr Y. Yoshie, Director, National Institute for Leprosy Research, Higashi-murayamashi, Tokyo, Japan

Unable to attend:

Dr J. A. Kinnear Brown, Hale, Altrincham, Cheshire, England

WHO Expert Committee on Drug Dependence²

Geneva, 25-31 August

Dr D. S. Bell, Psychiatrist in Charge, Psychiatric Research Unit, Callan Park Hospital, Rozelle, N.S.W., Australia

Dr H. Brill, Director, Pilgrim State Hospital, West Brentwood, New York, N.Y., USA

WHO Expert Committee on Malaria

Geneva, 19-30 October

Dr Mohamed Din bin Ahmad, Director-General of Medical Services, Ministry of Health, Kuala Lumpur, Malaysia

Professor L. J. Bruce-Chwatt, Head, Department of Tropical Hygiene, London School of Hygiene and Tropical Medicine; Director, Ross Institute of Tropical Medicine, London, England

Professor Natalija N. Duhanina, Chief, Department of Medical Protozoology, Marcinovskij Institute of Medical Parasitology and Tropical Medicine, Moscow, USSR

Dr A. Gabaldón, Consultant, Bureau of Malariology and Environmental Health, Ministry of Health and Social Welfare, Caracas, Venezuela

Dr L. Howard, Director, Office of Health, Technical Assistance Bureau, Agency for International Development, Washington, D.C., USA

Professor P. G. Janssens, Director, Prince Leopold Institute of Tropical Medicine, Antwerp, Belgium

Dr C. Mani, New Delhi, India

Dr I. Tabibzadeh, Director, Malaria Eradication Organization, Ministry of Health, Teheran, Iran

Unable to attend:

Dr J. K. Amorin, Acting Head, Department of Preventive and Social Medicine, Ghana Medical School, Accra, Ghana

WHO Expert Committee on Insecticides

Geneva, 17-23 November

Mr F. E. González-Valdivieso, Chief Engineer, Vector Control Section, Division of Rural Endemic Diseases, Maracay, Aragua, Venezuela

¹ Report published as *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 459.

² Report published as *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 460.

Dr J. Hamon, Chief, Entomological Mission, Office de la Recherche scientifique et technique outre-mer (ORSTOM) auprès de l'Organisation de Coordination et Coopération pour la Lutte contre les Grandes Endémies (OCCGE), Centre Muraz, Bobo-Dioulasso, Upper Volta

Mr A. E. H. Higgins, Field Station, Imperial College of Science and Technology, University of London, Ascot, Berkshire, England

Mr S. Kolta, Sanitary Engineer, Malaria Control Programme, Trucial States Council, Dubai

Mr C. W. Lee, Deputy Director, Mosquito Research and Control Unit, Grand Cayman, Cayman Islands

Mr J. A. Jensen, Chief, Engineering Activities, Technical Development Laboratories, Center for Disease Control, Savannah, Ga., USA

WHO Expert Committee on Biological Standardization

Geneva, 17-25 November

Dr H. H. Cohen, Director, National Institute of Public Health, Utrecht, Netherlands

Dr P. Krag, Director, International Laboratory for Biological Standards, Statens Seruminstitut, Copenhagen, Denmark

Dr M. Kurokawa, Chief, Department of General Biologics Control, National Institute of Health, Tokyo, Japan

Professor A. Lafontaine, Director, Institute of Hygiene and Epidemiology, Brussels, Belgium

Mr J. W. Lightbown, Division of Biological Standards, National Institute for Medical Research, London, England

Dr Chatoem Puranananda, Director, National Blood Centre, Thai Red Cross Society, Bangkok, Thailand

Mr M. Rouchdi, Public Health Laboratories, Cairo, United Arab Republic

Dr A. K. Thomas, Director, Central Research Institute, Kasauli, India

Dr W. W. Wright, Deputy Director, Pharmaceutical Research and Testing, Food and Drug Administration, Washington, D.C., USA

Unable to attend:

Mr J. R. Thayer, Chief Inspector, National Biological Standards Laboratory, Canberra, Australia

WHO Expert Committee on Family Planning in Health Services

Geneva, 24-30 November

Dr O. Avendano, Hospital R. Barros Luco-Trudeau, Santiago, Chile

Dr L. P. Chow, Chinese Centre for International Training in Family Planning, Taichung, Taiwan, Republic of China

Dr Harbans Dhillon, Deputy Director, Directorate of Health Services for the Punjab, Chandigarh, Punjab, India

Dr F. Hefnawi, Professor and Chairman, Department of Obstetrics and Gynaecology, Al-Azhar University, Cairo, United Arab Republic

Mrs S. Herovabadi, Director, High Institute of Nursing, Teheran, Iran

Dr F. T. Sai, Director of Medical Services, Ministry of Health, Accra, Ghana

Dr V. K. Tatochenko, Senior Scientist, Institute of Paediatrics, Academy of Medical Sciences of the USSR, Moscow, USSR

Dr C. E. Taylor, Professor and Chairman, Department of International Health, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md., USA

Professor Teodora V. Tiglao, Department of Public Health Administration, Institute of Hygiene, University of the Philippines, Manila, Philippines

Dr R. C. Wofinden, Professor of Public Health, University of Bristol, England

WHO Expert Committee on Health Statistics

Geneva, 1-7 December

Dr J. H. F. Brotherston, Chief Medical Officer, Scottish Home and Health Department, Edinburgh, Scotland

Dr G. Cerkovnyj, Chief, Department of Health Statistics, Ministry of Health of the USSR, Moscow, USSR

Dr C. Ferrero, Executive Director, National Health Survey, Buenos Aires, Argentina

Dr F. Rizk Hassan, Under-Secretary of State, Ministry of Public Health, Cairo, United Arab Republic

Dr G. Rösch, Deputy Director, Centre de Recherches et de Documentation sur la Consommation, Paris, France

Mr R. J. Rose, Public Health Statistician, National Health Statistics Centre, Department of Health, Wellington, New Zealand

Dr K. Saakwa-Mante, Senior Medical Officer, Ministry of Health, Accra, Ghana

Dr D. Sepetliev, Assistant Professor, Higher Medical School, Sofia, Bulgaria

Dr K. L. White, Professor and Chairman, Department of Medical Care and Hospitals, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md., USA

Joint Committees

Joint FAO/WHO Expert Committee on Food Additives¹

Geneva, 24 June - 2 July

Dr F. Berglund, Section of Toxicology, Department of Food Hygiene, National Institute of Public Health, Stockholm, Sweden

Dr W. T. C. Berry, Principal Medical Officer, Nutrition, Department of Health and Social Security, London, England

Dr H. Blumenthal, Chief, Petitions Review Branch, Bureau of Foods, Pesticides and Product Safety, Food and Drug Administration, Washington, D.C., USA

Dr H. Egan, Deputy Government Chemist, Ministry of Technology, London, England

Dr C. L. French, Senior Research Associate, Department of Quality Control, Mallinckrodt Chemical Works, St. Louis, Mo., USA

Dr R. van der Heide, Esso Research S.A., Diegem, Belgium

Dr K. Kojima, Chief, Food Chemistry Division, Ministry of Health and Welfare, Tokyo, Japan

Dr J. Mauron, Head, Biological Services, Research Laboratory, Nestlé Products Technical Assistance Co., Ltd., La Tour-de-Peilz, Switzerland

¹ Report published as *Wld Hlth Org. techn. Rep. Ser.*, 1971, No. 462.

Professor D. A. A. Mossel, Head, Laboratory of Bacteriology, Central Institute for Nutrition and Food Research, Zeist, Netherlands

Professor M. J. Rand, Department of Pharmacology, University of Melbourne, Victoria, Australia

Professor R. C. Truhaut, Director, Toxicological Research Centre, Faculty of Pharmacy, University of Paris, France

Unable to attend:

Professor A. I. Štenberg, Head, Food Hygiene Department, Institute of Nutrition, Academy of Medical Sciences of the USSR, Moscow, USSR

Joint FAO/WHO Expert Committee on Brucellosis

Geneva, 29 June - 6 July

Dr A. A. Ardalan, Razi Institute, Teheran, Iran

Professor D. T. Berman, Department of Veterinary Science, College of Agricultural and Life Sciences, University of Wisconsin, Madison, Wis., USA

Dr W. J. Brinley Morgan, Head, Diseases of Breeding Department, Central Veterinary Laboratory, Ministry of Agriculture, Fisheries and Food, Weybridge, England

Professor S. S. Elberg, School of Public Health, University of California, Berkeley, Calif., USA

Professor G. Gargani, Institute of Microbiology, University of Florence, Italy

Dr C. A. Manthei, Director, National Animal Disease Laboratory, Agricultural Research Service, United States Department of Agriculture, Ames, Iowa, USA

Dr T. N. Mathur, State Bacteriologist, Haryana Government Public Health Laboratory, Karnal, Haryana, India

Dr M. Moro, National Director, Veterinary Institute for Tropical and High Altitude Research, San Marcos University, Lima, Peru

Professor C. Pilet, Director, Laboratoire de Microbiologie-Immunologie et Laboratoire des Brucelloses, Ecole nationale vétérinaire d'Alfort, Val-de-Marne, France

Professor G. Renoux, Director, Laboratoire d'Etude des Brucelloses, Station de Pathologie de la Reproduction, Institut National de la Recherche agronomique, Nouzilly, Indre-et-Loire, France

Dr W. W. Spink, Regent's Professor of Medicine, School of Medicine; Professor of Comparative Medicine, School of Veterinary Medicine, University of Minnesota, Minneapolis, Minn., USA

Dr A. W. Stableforth, Merrow, Guildford, Surrey, England

Professor T. Čerendaš, Scientific Research Worker, Veterinary and Agricultural Scientific Research Institute, Ulan Bator, Mongolia

Professor P. A. Veršilova, Experimental Brucellosis Laboratory, Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

Joint Meeting of the FAO Working Party of Experts and the WHO Expert Committee on Pesticide Residues

Rome, 9-16 November

Dr D. C. Abbott, Division of Pesticides, Laboratory of the Government Chemist, London, England

Dr W. F. Almeida, Director, Division of Microbiology and Hygiene, Institute of Biology, São Paulo, Brazil

Dr V. Beneš, Head, Department of Toxicology and Reference Laboratory, Institute of Hygiene, Prague, Czechoslovakia

Professor F. Coulston, Director, Institute of Experimental Pathology and Toxicology, Albany Medical College, Union University, Albany, N.Y., USA

Dr K. R. Hill, Analytical Investigations Unit, Agricultural Research Service, Entomology Research Division, United States Department of Agriculture, Beltsville, Md., USA

Dr A. H. M. Kirby, East Malling Research Station, East Malling, Kent, England

Dr E. Pekka Koivistoinen, Director, Food Chemistry Division, University of Helsinki, Finland

Dr Y. Omori, Head, Department of Pharmacology, National Institute of Hygienic Sciences, Tokyo, Japan

Dr E. Poulsen, Director, Institute of Toxicology, Søborg, Denmark

Dr F. J. C. Roe, Head, Department of Experimental Pathology, Chester Beatty Research Institute, Institute of Cancer Research, Royal Cancer Hospital, London, England

Mr J. T. Snelson, Pesticide Co-ordinator, Department of Primary Industry, Canberra, Australia

Dr E. Y. Spencer, Director, Research Institute, Research Branch, Canada Department of Agriculture, London, Ont., Canada

Dr H. G. Verschuuren, Head, Department of Biological Toxicology, National Institute of Public Health, Utrecht, Netherlands

Joint FAO/WHO Expert Committee on Nutrition

Geneva, 9-18 November

Dr F. Aylward, Professor and Head, Department of Food Science, University of Reading, England

Dr J. Causseret, Director, Station de Recherches sur les Aliments de l'Homme, Dijon, France

Dr J. Cravioto, Chief, Department of Nutrition II; Professor of Paediatrics, Children's Hospital, Mexico City, Mexico

Dr C. Gopalan, Director, National Institute of Nutrition, Indian Council of Medical Research, Hyderabad, India

Dr R. S. Harris, Lasby Professor in the Health Sciences, Division of Health Sciences, University of Minnesota, Minneapolis, Minn., USA

Dr D. M. Hegsted, Professor of Nutrition, Department of Nutrition, School of Public Health, Harvard University, Boston, Mass., USA

Dr F. Monckeberg, Chief, Laboratory of Paediatric Investigations, School of Medicine, University of Chile, Santiago, Chile

Dr Maria Rakowska, Docent Dr habil. in Nutrition, Chief of Department of Food Science and Technology, Research Institute of Food and Nutrition, Warsaw, Poland

Dr F. T. Sai, Director of Medical Services, Ministry of Health, Accra, Ghana

Dr J. C. Waterlow, Professor of Human Nutrition, London School of Hygiene and Tropical Medicine, London, England

Joint ILO/WHO Committee on Personal Health Care and Social Security

Geneva, 10-16 November

Dr R. Asturias Valenzuela, formerly Minister of Public Health and Director, Guatemalan Institute of Social Security, Guatemala City, Guatemala

Dr T. Bana, Director-General, Public Health Service, Ministry of Public Health, Niamey, Niger

Dr R. Palec, Chair of Social Medicine and Organization of Health Services, Postgraduate Institute, Prague, Czechoslovakia

Mr A. Rafaoui, Hospital Administrator, Razi Hospital, Tunis, Tunisia

Professor G. F. Rohrlach, Professor of Political Economy and Social Insurance, Temple University, Philadelphia, Pa., USA

Dr A. J. Terra Ilarraz, Medical Officer of Public Health; Medical Officer, Social Security Bank, Montevideo, Uruguay

Unable to attend:

Dr R. L. Mehra, Deputy Medical Director, International Planned Parenthood Federation, London, England

Dr Y. Yoshida, Director, National Institute of Hospital Administration, Tokyo, Japan

3. COMMITTEE ON INTERNATIONAL SURVEILLANCE OF COMMUNICABLE DISEASES¹

Geneva, 30 November - 4 December

Dr H. Bijkerk, Medical Officer of Health, Head, Section of Communicable Diseases, Office of the Chief Medical Officer of Health, Ministry of Social Affairs and Public Health, Leidschendam, Netherlands

Dr P. N. Burgasov, Deputy Minister of Health of the USSR, Moscow, USSR

Dr S. J. Farsey, Senior Lecturer in Preventive Medicine, Makerere University College Medical School, Kampala, Uganda

Dr G. Wynne Griffith, Principal Medical Officer, Department of Health and Social Security, London, England

Dr A. Omar, Deputy Minister of Public Health; Professor of Microbiology, Faculty of Medicine, University of Kabul, Afghanistan

Dr D. J. Sencer, Assistant Surgeon-General; Director, Center for Disease Control, Atlanta, Ga., USA

Dr I. Shigematsu, Chief, Department of Epidemiology, Institute of Public Health, Tokyo, Japan

Dr Julie Sulianti Saroso, Director-General for Communicable Disease Control, Ministry of Health, Djakarta, Indonesia¹

4. ADVISORY COMMITTEE ON MEDICAL RESEARCH

The Advisory Committee on Medical Research was established pursuant to resolution WHA12.17.

Twelfth Session, Geneva, 22-26 June

Professor L. L. Cavalli-Sforza, Department Chairman, Institute of Genetics, University of Pavia, Italy

Sir John Eccles, Laboratory of Neurobiology, State University of New York at Buffalo, N.Y., USA

Professor J. Hamburger, Professeur de Clinique néphrologique de la Faculté de Médecine, Hôpital Necker, Paris, France

Professor W. Kurylowicz, Director, State Institute of Hygiene, Warsaw, Poland

Professor T. A. Lambo, Vice-Chancellor, University of Ibadan, Nigeria

Professor A. M. Lwoff, Director, Institut de Recherches scientifiques sur le Cancer, Villejuif, Val-de-Marne, France

Professor C. M. H. Mofidi, Vice-Chancellor for Research, University of Teheran, Iran

Sir Alan Parkes, Chairman, The Galton Foundation, London, England

Sir Max Rosenheim, President, Royal College of Physicians, London, England

Professor K. L. Standard, Head, Department of Social and Preventive Medicine, University of the West Indies, Kingston, Jamaica

Professor V. D. Timakov, President, Academy of Medical Sciences of the USSR, Moscow, USSR

Professor T. B. Turner, Dean Emeritus, Johns Hopkins University, Baltimore, Md., USA

Professor P. N. Wahi, Director-General, Indian Council of Medical Research, New Delhi, India

Professor T. H. Weller, Richard Pearson Strong Professor of Tropical Public Health; Chairman, Department of Tropical Public Health, School of Public Health, Harvard University, Boston, Mass., USA

Unable to attend:

Professor D. Bovet, Laboratory of Psychobiology and Psychopharmacology, National Research Council, Rome, Italy

Professor M. Prywes, Vice-President, Hebrew University of Jerusalem, Israel

Professor M. Roche, Chairman, National Council of Scientific and Technical Research, Los Ruines, Estado Miranda, Venezuela

¹ Formerly Committee on International Quarantine.

Annex 5

SCIENTIFIC GROUP MEETINGS IN 1970

Scientific Group on Microbic Sensitivity Testing of Antibiotics	Geneva, 29 June - 4 July
Scientific Group on Methodology for Family Studies of Genetic Factors	Geneva, 1-7 September
Scientific Group on Endocrine Regulation of Human Gestation	Geneva, 14-18 September
Scientific Group on Health Aspects of the Supply and Use of Non-Human Primates for Biomedical Purposes	Geneva, 23-29 September
Scientific Group on Research in Epidemiology and Communications Science	Geneva, 12-16 October
Scientific Group on Psychogeriatrics	Geneva, 19-23 October
Scientific Group on the Prevention of Rh Sensitization	Geneva, 19-23 October
Scientific Group on the Development of Studies in Health Manpower	Geneva, 2-10 November
Scientific Group on the Use of Cannabis	Geneva, 8-14 December
Scientific Group on Advances in Research on, and Clinical Experience with, Methods of Fertility Regulation	Geneva, 14-18 December

Annex 6

WHO REFERENCE CENTRES

Below are listed the institutions that served or were designated as international or regional reference centres during 1970.

BACTERIAL DISEASES¹

Enteric Infections

International Reference Centre for Enteric Phage-Typing
Central Public Health Laboratory, London, England

International Reference Centre for Escherichia
Statens Seruminstitut, Copenhagen, Denmark

International Reference Centre for Salmonella
Institut Pasteur, Paris, France

International Reference Centres for Shigella
Central Public Health Laboratory, London, England
Center for Disease Control, Atlanta, Ga., USA

International Reference Centre for Vibrios
Cholera Research Centre, Calcutta, India

Meningococcal Infections

International Reference Centre for Meningococci
Laboratoire de Microbiologie, Centre de Recherches du Service
de Santé des Troupes de Marine, Marseilles, France

Plague

International Reference Centre for Plague

* Central Asian Institute for Research on Plague Control,
Alma-Ata, USSR

Staphylococcal Infections

International Reference Centre for Staphylococcal Phage-Typing
Central Public Health Laboratory, London, England

Streptococcal Infections

International Reference Centre for Streptococcus Typing
Streptococcus Reference Laboratory, Institute of Epidemiology
and Microbiology, Prague, Czechoslovakia

BIOLOGY, PHARMACOLOGY AND TOXICOLOGY

Antibiotics

International Centre for Information on Antibiotics
Laboratoire de Bactériologie et de Parasitologie, University of
Liège, Belgium

Biological Standardization

International Laboratories for Biological Standards
Statens Seruminstitut, Copenhagen, Denmark
National Institute for Medical Research, London, England
Central Veterinary Laboratory, Ministry of Agriculture, Fisheries
and Food, Weybridge, England

Food Additives

*FAO/WHO International Reference Centre for Documentation
on Marine Biotoxins*

* World Life Research Institute, Colton, Calif., USA

¹ The reference centres for leprosy and tuberculosis are shown under separate headings, and that for gonococci under Venereal Infections and Treponematoses.

* Initiated in 1970.

Human Genetics*International Reference Centre for Abnormal Haemoglobins*

Medical Research Council's Abnormal Haemoglobin Research Unit, University of Cambridge, England

International Reference Centre for Glucose-6-Phosphate Dehydrogenase

Department of Medicine, University of Washington, Seattle, Wash., USA

Regional Reference Centres for Glucose-6-Phosphate Dehydrogenase

Department of Haematology, Tel-Hashomer Government Hospital, Israel

Sub-Department of Haematology, University College Hospital, Ibadan, Nigeria

International Reference Centre for the Processing of Human Genetics Data

Population Genetics Laboratory, School of Medicine, University of Hawaii, Honolulu, Hawaii, USA

International Reference Centre for Serum Protein Groups

Zoology Department, University of Texas, Austin, Tex., USA

Human Reproduction*International Reference Centre for the Biology of Spermatzoa*

Laboratory of Reproductive Pharmacology, New York Medical College, New York, N.Y., USA

International Reference Centre for Fertility Promoting Agents

Institute of Endocrinology, Tel-Hashomer Government Hospital, Israel

Research and Training Centre on Human Reproduction

* Reproductive Endocrinology Research Unit, Karolinska Institute, Stockholm, Sweden

Immunology*International Reference Centre for Genetic Factors of Human Immunoglobulins*

Centre départemental de Transfusion sanguine et de Génétique humaine, Bois-Guillaume, Seine-Maritime, France

Regional Reference Centres for Genetic Factors of Human Immunoglobulins

Department of Medical Microbiology, University of Lund, Sweden

Department of Biology, Western Reserve University, Cleveland, Ohio, USA

International Reference Centre for Immunoglobulins

Institut de Biochimie, University of Lausanne, Switzerland

Regional Reference Centre for Immunoglobulins

National Cancer Institute, National Institutes of Health, Bethesda, Md., USA

International Reference Centre for the Use of Immunoglobulin Anti-D in the Prevention of Rh Sensitization

Medical Research Council's Experimental Haematology Research Unit, St Mary's Hospital Medical School, London, England

International Reference Centre for the Serology of Autoimmune Disorders

Department of Immunology, Middlesex Hospital Medical School, London, England

Regional Reference Centres for the Serology of Autoimmune Disorders

The Walter and Eliza Hall Institute of Medical Research, Melbourne University, Australia

Department of Bacteriology and Immunology, School of Medicine, State University of New York at Buffalo, N.Y., USA

International Reference Centre for Testing of Natural Resistance Factors

Department of Immunology, Institute of Microbiology, Prague, Czechoslovakia

International Reference Centre for Tumour-Specific Antigens

Division of Immunology and Oncology, Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

Research and Training Centres for Immunology

Instituto Butantan, São Paulo, Brazil

* School of Medicine, American University of Beirut, Lebanon

Children's Hospital of Mexico, Mexico City, Mexico

Department of Chemical Pathology, University College Hospital, Ibadan, Nigeria

Faculty of Medicine, University of Singapore, Singapore

Institut de Biochimie, University of Lausanne, Switzerland

Pharmaceuticals*International Reference Centre for Chemical Reference Substances*

Centre for Authentic Chemical Substances, Apotekens Central-laboratorium, Solna, Stockholm, Sweden

CHRONIC AND DEGENERATIVE DISEASES**Cancer***International Reference Centre for Comparative Oncology*

Armed Forces Institute of Pathology, Washington, D.C., USA

International Reference Centre for Evaluation of Methods of Diagnosis and Treatment of Breast Cancer

Institut Gustave Roussy, Villejuif, Val-de-Marne, France

International Reference Centre for Evaluation of Methods of Diagnosis and Treatment of Female Genital Tract (Ovarian) Cancer

N. N. Petrov Research Institute of Oncology, Leningrad, USSR

International Reference Centre for Evaluation of Methods of Diagnosis and Treatment of Melanoma

National Institute for the Study and Treatment of Tumours, Milan, Italy

International Reference Centre for Evaluation of Methods of Diagnosis and Treatment of Stomach Cancer

* National Cancer Centre Hospital, Tokyo, Japan

* Initiated in 1970.

International Reference Centre for the Histopathological Nomenclature and Classification of Bone Tumours

Latin American Registry of Bone Pathology, Osteo-articular Pathology Centre, Italian Hospital, Buenos Aires, Argentina

International Reference Centre for the Histopathological Nomenclature and Classification of Tumours of the Central Nervous System and Allied Structures

* Department of General Neurology, Max-Planck Institute for Brain Research, Cologne, Federal Republic of Germany

International Reference Centre for the Histopathological Nomenclature and Classification of Gastro-oesophageal Tumours

Department of Pathology, University of Tokyo Faculty of Medicine, Tokyo, Japan

International Reference Centre for the Histopathological Nomenclature and Classification of Intestinal Tumours

Research Department, St Mark's Hospital, London, England

International Reference Centre for the Histopathological Nomenclature and Classification of Leukaemias and other Neoplastic Conditions of the Haematopoietic Cells

Institut de Cancérologie et d'Immunogénétique, Hôpital Paul-Brousse, Villejuif, Val-de-Marne, France

International Reference Centre for the Histopathological Nomenclature and Classification of Lung Tumours

Institute of General and Experimental Pathology, University of Oslo, Norway

International Reference Centre for the Histopathological Nomenclature and Classification of Male Urogenital Tract Tumours

Armed Forces Institute of Pathology, Washington, D.C., USA

International Reference Centre for the Histopathological Nomenclature and Classification of Mammary Tumours

Bland Sutton Institute of Pathology, Middlesex Hospital, London, England

International Reference Centre for the Histopathological Nomenclature and Classification of Odontogenic Tumours

Department of Oral Pathology, Royal Dental College, Copenhagen, Denmark

International Reference Centre for the Histopathological Nomenclature and Classification of Oral Precancerous Conditions

Department of Oral Pathology, Royal Dental College, Copenhagen, Denmark

International Reference Centre for the Histopathological Nomenclature and Classification of Oropharyngeal Tumours

Sarojini Najdu Medical College, Agra, Uttar Pradesh, India

International Reference Centre for the Histopathological Nomenclature and Classification of Ovarian Tumours

N. N. Petrov Research Institute of Oncology, Leningrad, USSR

International Reference Centre for the Histopathological Nomenclature and Classification of Salivary Gland Tumours

Bland Sutton Institute of Pathology, Middlesex Hospital, London, England

International Reference Centre for the Histopathological Nomenclature and Classification of Skin Tumours

Pathology Department, University of Western Australia, Perth, Australia

International Reference Centre for the Histopathological Nomenclature and Classification of Soft Tissue Tumours

Armed Forces Institute of Pathology, Washington, D.C., USA

International Reference Centre for the Histopathological Nomenclature and Classification of Thyroid Tumours

University Institute of Pathology, Cantonal Hospital, Zurich, Switzerland

International Reference Centre for the Histopathological Nomenclature and Classification of Uterine and Placental Tumours

Institute of Pathology, Municipal Hospital, Copenhagen, Denmark

International Reference Centre for Nomenclature in Cytology (Female Genital Tract)

Centre de Cytologie et de Dépistage du Cancer, Geneva, Switzerland

WHO/IARC International Reference Centre for the Provision of Frozen Transplantable Tumour Strains

Research Unit of Tumour Immunology, Karolinska Institute, Stockholm, Sweden

WHO/IARC International Reference Centre for the Provision and Study of Tumour-bearing Animals

Netherlands Cancer Institute, Amsterdam, Netherlands

Cardiovascular Diseases

International Reference Centre for Lipid Determination in Cardiovascular Research

Lipid Standardization Laboratory, Medical Laboratory Section, Center for Disease Control, Atlanta, Ga., USA

Research and Training Centre for Cardiovascular Diseases

Makerere University College Medical School, Kampala, Uganda

Rheumatic Diseases

International Reference Centre for the Study of Connective Tissue Diseases

Hôpital Cochin, Paris, France

ENVIRONMENTAL HEALTH

Air Pollution

International Reference Centre for Clinical and Epidemiological Aspects of Air Pollution

Medical Research Council's Air Pollution Research Unit, St Bartholomew's Hospital Medical College, London, England

International Reference Centre on Air Pollution Control

* Air Pollution Control Office, Environmental Protection Agency, Rockville, Md., USA

Regional Reference Centres on Air Pollution

Central Public Health Engineering Research Institute, Nagpur, India

* Department of Community Environmental Sciences, Institute of Public Health, Tokyo, Japan

* Initiated in 1970.

Department of Community Hygiene, Central Institute for Advanced Medical Studies, Ministry of Health of the USSR, Moscow, USSR

Community Water Supply

International Reference Centre on Community Water Supply

Chemical and Bacteriological Department, Institute for Water Supply, The Hague, Netherlands

Radiation

International Reference Centre on Environmental Radiation

Service central de Protection contre les Rayonnements ionisants, Le Vésinet, Yvelines, France

Wastes Disposal

International Reference Centre on Wastes Disposal

Federal Institute for Water Supply, Sewage Purification and Water Pollution Control, Zurich, Switzerland

LEPROSY

International Reference Centre for the Serology of Leprosy

Department of Microbiology and Immunology, Ribeirão Preto Faculty of Medicine, University of São Paulo, Brazil

Regional Reference Centres for Mycobacterium leprae

Division of Bacteriology and Virus Research, National Institute for Medical Research, London, England

Virology Section, Center for Disease Control, Atlanta, Ga., USA

Regional Reference Centres for the Standardization of Lepromin

Laboratory of Serology, National Institute for Leprosy Research, Tokyo, Japan

Leonard Wood Memorial Laboratory for Leprosy Research, Johns Hopkins University, Baltimore, Md., USA

MALARIA

International Reference Centre for Malaria

Laboratory of Parasite Chemotherapy, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md., USA

Regional Reference Centres for Malaria

Horton Malaria Reference Laboratory, Epsom, England

National Institute of Communicable Diseases, New Delhi, India

International Reference Centre for Avian Malaria Parasites

Department of Biology, Memorial University of Newfoundland, St John's, Newfoundland, Canada

Regional Reference Centre for Screening of Potential Antimalarial Compounds

Department of Parasitology, Liverpool School of Tropical Medicine, Liverpool, England

MENTAL HEALTH

International Reference Centre for Information on Psychotropic Drugs

National Institute of Mental Health, Chevy Chase, Md., USA

International Reference Centre for the Study of Adverse and Side Effects of Psychotropic Drugs

Centre psychiatrique Sainte-Anne, Paris, France

Regional Reference Centres for the Study of Psychotropic Drugs

Faculty of Medicine, Hokkaido University, Sapporo, Japan

Clinique neuro-psychiatrique, Faculté mixte de Médecine et de Pharmacie, University of Dakar, Senegal

Psychiatric Clinic, Faculty of Medicine, University of Basle, Switzerland

NUTRITION

Anaemias

International Reference Centre for Anaemias

School of Medicine, University of Washington, Seattle, Wash., USA

Regional Reference Centres for Anaemias

Department of Pathology, St Bartholomew's Hospital Medical College, London, England

Venezuelan Institute for Scientific Research, Caracas, Venezuela

PARASITIC DISEASES¹

Filariasis

International Reference Centre for Filarial Nematodes

Department of Parasitology, London School of Hygiene and Tropical Medicine, London, England

Leishmaniasis

International Reference Centre for Leishmaniasis

Department of Parasitology, Hadassah Medical School, Jerusalem, Israel

Schistosomiasis

Snail Identification Centre

Danish Bilharziasis Laboratory, Copenhagen, Denmark

Trypanosomiasis

International Reference Centre for Trypanosomiasis

East African Trypanosomiasis Research Organization, Tororo, Uganda

RADIATION HEALTH

Regional Reference Centres for Secondary Standards in Radiation Dosimetry

Laboratory for Dosimetry, National Atomic Energy Commission, Buenos Aires, Argentina

Radiation Hygiene Laboratory, Institute of Hygiene, Bucharest, Romania

* Radiotherapy Department, Outram Road General Hospital, Singapore

¹ The reference centres for malaria are shown under a separate heading.

* Initiated in 1970.

TUBERCULOSIS

International Reference Centre for the Diagnosis of Tuberculosis
Tuberculosis Research Institute, Prague, Czechoslovakia

Regional Reference Centre for the Diagnosis of Tuberculosis
Department of Tuberculosis, National Institute of Health,
Tokyo, Japan

International Reference Centre for BCG Seed-lots and Control of BCG Products

BCG Department, Statens Seruminstitut, Copenhagen, Denmark

Regional Reference Centre for Bacteriology of Tuberculosis
National Tuberculosis Institute, El Algodonal, Caracas,
Venezuela

VECTOR BIOLOGY AND CONTROL

International Reference Centre for the Diagnosis of Diseases of Vectors

Department of Zoology and Entomology, Ohio State University,
Columbus, Ohio, USA

International Reference Centres for the Evaluation and Testing of New Insecticides

Toxicology Research Unit, Medical Research Council Laboratories, Carshalton, Surrey, England

Tropical Pesticides Research Unit, Salisbury, Wiltshire, England

Department of Entomology, College of Liberal Arts and Sciences, University of Illinois, Urbana, Ill., USA

Entomological Research Division, United States Department of Agriculture, Agricultural Research Service, Gainesville, Fla., USA

Technical Development Laboratories, Center for Disease Control, Savannah, Ga., USA

Mission entomologique, Centre Muraz, Bobo-Dioulasso, Upper Volta

International Reference Centre for Maintenance and Distribution of Standardized Strains of the Aedes Complex

* Department of Biology, University of Notre Dame, Ind., USA

International Reference Centre for Maintenance and Distribution of Standardized Strains of Anopheles

Ross Institute, London School of Hygiene and Tropical Medicine, London, England

International Reference Centre for Maintenance and Distribution of Standardized Strains of the Culex pipiens Complex

Institute of Genetics, Johannes Gutenberg University, Mainz, Federal Republic of Germany

International Reference Centre for Maintenance and Distribution of Standardized Strains of Musca domestica

Institute of Zoology, University of Pavia, Italy

Regional Reference Centres for the Biology and Distribution of Ticks

* Institute of Parasitology, Prague, Czechoslovakia

* United States Naval Medical Research Unit No. 3, Cairo, United Arab Republic

* Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

* Department of Zoology, University of Maryland, College Park, Md., USA

VENEREAL INFECTIONS AND TREPONEMATOSES

International Reference Centre for Endemic Treponematoses
Institut Alfred-Fournier, Paris, France

International Reference Centre for Gonococci

Neisseria Department, Statens Seruminstitut, Copenhagen, Denmark

International Reference Centre for the Biology and Immunology of Treponemes

Johns Hopkins University, Baltimore, Md., USA

International Reference Centres for the Serology of Treponematoses

Treponematoses Research Laboratory, Statens Seruminstitut, Copenhagen, Denmark

Venereal Disease Research Laboratory, Center for Disease Control, Atlanta, Ga., USA

VIRUS DISEASES¹

Arbovirus Diseases

International Reference Centre for Arboviruses

Department of Epidemiology and Public Health, Yale University School of Medicine, New Haven, Conn., USA

Regional Reference Centres for Arboviruses

Department of Virology, Queensland Institute of Medical Research, Brisbane, Australia

Institute of Virology, Bratislava, Czechoslovakia

Laboratoire des Arbovirus, Institut Pasteur, Paris, France

Virus Research Centre, Indian Council of Medical Research, Poona, India

Department of Virology and Rickettsiology, National Institute of Health, Tokyo, Japan

Institut Pasteur, Dakar, Senegal

East African Virus Research Institute, East African Common Services Organization, Entebbe, Uganda

Department for Arboviruses, Institute of Poliomyelitis and Viral Encephalitides, Moscow, USSR

Virology Section, Center for Disease Control, Atlanta, Ga., USA

Cell Cultures

International Reference Centre for Cell Cultures

American Type Culture Collection, Rockville, Md., USA

¹ Not including rabies, shown under Zoonoses.

* Initiated in 1970.

Enterovirus Diseases*International Reference Centre for Enteroviruses*

Department of Virology and Epidemiology, Baylor University
College of Medicine, Houston, Tex., USA

Regional Reference Centres for Enteroviruses

Enterovirus Department, Statens Serum Institut, Copenhagen,
Denmark

Section de Virologie, Laboratoire national de la Santé publique,
Lyons, France

Department of Enteroviruses, National Institute of Health,
Tokyo, Japan

Department of Bacteriology, University of Singapore

Enterovirology Unit, Virology Section, Center for Disease
Control, Atlanta, Ga., USA

Institute of Poliomyelitis and Viral Encephalitides, Moscow,
USSR

Influenza*World Influenza Centre*

National Institute for Medical Research, London, England

International Influenza Centre for the Americas

Virology Section, Center for Disease Control, Atlanta, Ga.,
USA

Mycoplasmas*International Reference Centre for Human Mycoplasmas*

Laboratory of Infectious Diseases, National Institute of Allergy
and Infectious Diseases, National Institutes of Health,
Bethesda, Md., USA

FAO/WHO International Reference Centre for Animal Mycoplasmas

Institute of General Pathology, University of Aarhus Medical
Faculty, Denmark

Respiratory Virus Diseases other than Influenza*International Reference Centres for Respiratory Viruses other than Influenza*

Common Cold Research Unit, National Institute for Medical
Research, Harvard Hospital, Salisbury, England

Laboratory of Infectious Diseases, National Institute of Allergy
and Infectious Diseases, National Institutes of Health,
Bethesda, Md., USA

Regional Reference Centres for Respiratory Viruses other than Influenza

Fairfield Hospital Communicable Disease Centre, Melbourne,
Australia

Institute of Epidemiology and Microbiology, Prague, Czecho-
slovakia

Respiratory Virus Laboratory, National Institute of Health,
Tokyo, Japan

Ivanovskij Institute of Virology, Moscow, USSR

Virology Section, Center for Disease Control, Atlanta, Ga., USA

Rickettsioses*Regional Reference Centres for Human Rickettsioses*

Institute of Virology, Bratislava, Czechoslovakia

Rocky Mountain Laboratory, National Institute of Allergy and
Infectious Diseases, Hamilton, Mont., USA

Smallpox*International Reference Centre for Smallpox*

* Laboratory of Smallpox Prophylaxis, Research Institute of
Virus Preparations, Moscow, USSR

Regional Reference Centre for Smallpox

Center for Disease Control, Atlanta, Ga., USA

International Reference Centre for Smallpox Vaccine

Virus and Rickettsial Diseases Laboratory, National Institute
of Public Health, Utrecht, Netherlands

Regional Reference Centre for Smallpox Vaccine

Connaught Medical Research Laboratories, University of
Toronto, Ont., Canada

Trachoma*International Reference Centre for Trachoma*

Francis I. Proctor Foundation for Research in Ophthalmology,
University of California Medical Center, San Francisco,
Calif., USA

VITAL AND HEALTH STATISTICS**Classification of Diseases***International Reference Centres for the Classification of Diseases*

Office of Population Censuses and Surveys, Somerset House,
London, England

Section Information sur la Santé publique, Institut national de
la Santé et de la Recherche médicale, Boulogne-sur-Seine,
France

Department of Public Health Statistics, Semaško Institute of
Social Hygiene and Public Health Administration, Moscow,
USSR

Latin American Centre for Classification of Diseases, Centro
Simón Bolívar, Caracas, Venezuela

ZOONoses**Brucellosis***FAO/WHO Brucellosis Centres*

Commonwealth Serum Laboratories, Parkville, Victoria,
Australia

State Veterinary Serum Laboratory, Copenhagen, Denmark

Central Veterinary Laboratory, Ministry of Agriculture, Fisheries
and Food, Weybridge, England

Centre de Recherches sur la Fièvre ondulante, Montpellier,
Hérault, France

Veterinary Microbiological Institute, Athens, Greece

* Initiated in 1970.

Indian Veterinary Research Institute, Mukteswar-Kumaon,
Uttar Pradesh, India

Institute of Hygiene, University of Florence Faculty of Medicine,
Italy

National Institute of Animal Health, Tokyo, Japan

Medical Research Institute, General Hospital, Mexico City,
Mexico

Institut Pasteur, Tunis, Tunisia

Institute of Veterinary Bacteriology and Serology, Istanbul,
Turkey

Department of Medicine, University of Minnesota Medical
School, Minneapolis, Minn., USA

State Laboratory of Hygiene, Rijeka, Yugoslavia

WHO Brucellosis Centre

Gamaleja Institute of Epidemiology and Microbiology, Moscow,
USSR

Leptospirosis

WHO/FAO Leptospirosis Reference Laboratories

Laboratory of Microbiology and Pathology, State Health
Department, Brisbane, Australia

London School of Hygiene and Tropical Medicine, London,
England

Israel Institute for Biological Research, Ness-Ziona, Israel

Istituto Superiore di Sanità, Rome, Italy

National Institute of Health, Tokyo, Japan

Institute for Tropical Hygiene (Royal Tropical Institute),
Amsterdam, Netherlands

Division of Veterinary Medicine, Walter Reed Army Medical
Center, Washington, D.C., USA

WHO Leptospirosis Reference Laboratory

Gamaleja Institute of Epidemiology and Microbiology, Moscow,
USSR

Rabies

International Reference Centres for Rabies

Institut Pasteur, Paris, France

Pasteur Institute of Southern India, Coonoor, India

Institute of Poliomyelitis and Viral Encephalitides, Moscow,
USSR

Wistar Institute of Anatomy and Biology, Philadelphia, Pa.,
USA

Regional Reference Centre for Rabies in the Americas

Rabies Laboratory, Center for Disease Control, Atlanta, Ga.,
USA

OTHER FIELDS

Blood Groups

International Blood Group Reference Laboratory

Medical Research Council's Blood Group Reference Laboratory,
London, England

Research in Epidemiology and Communications Science

Epidemiological Research Centre

Institute of Public Health Research, School of Public Health,
University of Teheran, Iran

Serum Reference Banks

Institute of Epidemiology and Microbiology, Prague, Czecho-
slovakia

* National Institute of Health, Tokyo, Japan

Department of Epidemiology and Public Health, Yale University
School of Medicine, New Haven, Conn., USA

* Initiated in 1970.

Annex 7

**WHO COLLABORATIVE RESEARCH: CONTRACTS CONCLUDED
WITH INSTITUTIONS FOR PROJECTS INITIATED IN 1970**

Subject of Research	Region						Total
	Africa	The Americas	South-East Asia	Europe	Eastern Mediterranean	Western Pacific	
Bacterial diseases (other than leprosy and tuberculosis)	3	2	2	2	—	3	12
Biology, pharmacology and toxicology:							
Biological standardization	—	—	—	2	—	—	2
Drug monitoring	—	—	—	—	—	1	1
Drug safety	—	—	—	4	—	—	4
Food additives	—	2	—	3	—	2	7
Immunology	—	3	—	7	—	—	10
Chronic and degenerative diseases:							
Cancer	—	—	—	1	—	—	1
Cardiovascular diseases	1	1	—	2	1	3	8
Community health services	—	—	1	—	—	—	1
Dental health	—	1	—	—	—	—	1
Environmental health:							
Community water supply	—	—	—	1	—	—	1
Environmental pollution	—	—	—	1	—	—	1
Family health:							
Human genetics	1	1	1	5	—	—	8
Human reproduction	—	1	1	3	—	2	7
Maternal and child health	1	—	—	—	—	—	1
Health education	—	—	1	—	—	—	1
Leprosy	—	—	—	—	—	1	1
Malaria	1	2	1	3	—	—	7
Nutrition	1	1	—	1	1	—	4
Occupational health	1	—	2	4	1	3	11
Parasitic diseases (other than malaria)	1	—	—	6	—	—	7
Radiation health	—	2	—	6	—	—	8
Research in epidemiology and communications science	—	1	—	3	1	—	5
Smallpox	—	—	—	2	—	—	2
Tuberculosis	2	—	—	2	—	—	4
Vector biology and control	3	2	—	2	—	—	7
Venereal infections and treponematoses	—	—	—	3	—	—	3
Veterinary public health	—	5	1	12	1	—	19
Virus diseases (other than smallpox)	2	1	—	3	—	—	6
TOTAL	17	25	10	78	5	15	150

Annex 8

**RESEARCH GRANTS AWARDED FOR TRAINING AND EXCHANGE IN 1970,
BY SUBJECT AND TYPE OF GRANT**

Subject	Training grants	Grants for exchange of research workers	Total
Bacterial diseases (other than leprosy and tuberculosis)	3	3	6
Biology, pharmacology and toxicology:			
Human genetics	7	2	9
Human reproduction	23	1	24
Immunology	7	2	9
Pharmacology and toxicology	2	—	2
Chronic and degenerative diseases:			
Cancer	2	4	6
Cardiovascular diseases	2	2	4
Environmental pollution	—	1	1
Leprosy	—	1	1
Malaria	—	1	1
Mental health	2	1	3
Nutrition	2	—	2
Organization of medical care	1	2	3
Parasitic diseases (other than malaria)	2	6	8
Research in education	2	—	2
Research in epidemiology and communications science:			
Ecology	—	1	1
Operational research	1	—	1
Smallpox	—	1	1
Tuberculosis	3	1	4
Vector biology and control	1	—	1
Venereal infections and treponematoses	1	1	2
Veterinary public health	5	1	6
Virus diseases (other than smallpox)	3	3	6
TOTAL ¹	69	34	103

¹ In addition, research grants were awarded, supported entirely or in part by the Government of Czechoslovakia (1) and the Swedish National Association against Heart and Chest Diseases (2).

Annex 9

**FELLOWSHIPS AWARDED, BY SUBJECT OF STUDY AND BY REGION,
1 December 1969 - 30 November 1970**

Subject of Study	Region						Total
	Africa	The Americas	South-East Asia	Europe	Eastern Mediterranean	Western Pacific	
Health Organization and Services							
PUBLIC HEALTH ADMINISTRATION							
Public health administration	51	150	23	40	43	37	344
Hospital and medical care administration	11	20	17	15	27	9	99
Construction of health institutions	—	18	1	5	—	—	24
Medical librarianship	1	7	—	—	2	—	10
Sub-total — Public Health Administration	63	195	41	60	72	46	477
ENVIRONMENTAL HEALTH							
Environmental sanitation	85	66	29	98	53	39	370
Housing and town planning	1	1	—	2	1	—	5
Food control	—	13	1	4	3	1	22
Sub-total — Environmental Health	86	80	30	104	57	40	397
NURSING							
Nursing and midwifery	107	53	41	35	57	27	320
Public health nursing	20	11	3	3	4	15	56
Medical social work	3	—	—	1	—	—	4
Sub-total — Nursing	130	64	44	39	61	42	380
MATERNAL AND CHILD HEALTH							
Maternal and child health.	13	21	19	16	16	17	102
Paediatrics and obstetrics	26	21	23	15	23	2	110
Sub-total — Maternal and Child Health	39	42	42	31	39	19	212
OTHER HEALTH SERVICES							
Mental health	8	8	7	25	18	18	84
Health education	3	8	15	4	5	11	46
Occupational health	1	14	7	21	13	10	66
Nutrition	21	18	13	3	5	8	68
Health statistics	19	35	12	23	13	5	107
Dental health	18	5	8	9	12	18	70
Rehabilitation	13	14	10	11	14	7	69
Control of pharmaceutical and biological preparations	9	14	17	6	14	9	69
Sub-total — Other Health Services	92	116	89	102	94	86	579
TOTAL — HEALTH ORGANIZATION AND SERVICES	410	497	246	336	323	233	2 045
<i>Percentage</i>	41	64	55	60	51	57	53

Annex 9 (continued)

Subject of Study	Region						Total
	Africa	The Americas	South-East Asia	Europe	Eastern Mediterranean	Western Pacific	
Communicable Diseases							
Malaria	31	2	28	7	25	62	155
Venereal infections and treponematoses	—	5	2	2	1	4	14
Tuberculosis	7	34	27	6	18	31	123
Other communicable diseases	38	53	40	16	40	18	205
Laboratory services	78	36	37	49	55	25	280
Chemotherapy, antibiotics	—	2	1	1	—	—	4
TOTAL — COMMUNICABLE DISEASES	154	132	135	81	139	140	781
<i>Percentage</i>	<i>16</i>	<i>17</i>	<i>31</i>	<i>14</i>	<i>33</i>	<i>34</i>	<i>21</i>
Clinical Medicine, Basic Medical Sciences and Medical and Allied Education							
CLINICAL MEDICINE							
Surgery and medicine	20	1	6	19	10	3	59
Anaesthesiology	12	—	4	8	21	9	54
Radiology	11	3	10	5	18	7	54
Haematology	12	1	3	4	9	1	30
Other medical and surgical specialties	21	2	14	63	20	4	124
Sub-total — Clinical Medicine	76	7	37	99	78	24	321
BASIC MEDICAL SCIENCES AND MEDICAL AND ALLIED EDUCATION							
Basic medical sciences	35	2	21	27	19	2	106
Medical and allied education	55	141	4	21	8	4	233
Undergraduate medical studies	263	—	2	—	71	8	344
Sub-total — Basic Medical Sciences and Medical and Allied Education	353	143	27	48	98	14	683
TOTAL — CLINICAL MEDICINE, BASIC MEDICAL SCIENCES AND MEDICAL AND ALLIED EDUCATION	429	150	64	147	176	38	1 004
<i>Percentage</i>	<i>43</i>	<i>19</i>	<i>14</i>	<i>26</i>	<i>27</i>	<i>9</i>	<i>26</i>
GRAND TOTAL	993	779	445	564	638	411	3 830

Annex 10

PUBLICATIONS ISSUED IN 1970 ¹

MONOGRAPH SERIES

- 29 *Infant Nutrition in the Subtropics and Tropics*, by D. B. Jelliffe (second edition) (F, S)
- 54 *Hospital Planning and Administration*, by R. Llewellyn-Davies & H. M. C. Macaulay (S)
- 57 *Interactions of Nutrition and Infection*, by N. S. Scrimshaw, C. E. Taylor & J. E. Gordon (S)
- 58 *The Teaching of Public Health in Europe*, by J. D. Cottrell (S)
- 59 *Fluorides and Human Health*, by P. Adler et al. (E)

PUBLIC HEALTH PAPERS

- 34 *Principles and Practice of Screening for Disease*, by J. M. G. Wilson & G. Jungner (F)
- 36 *A Review of the Nature and Uses of Examinations in Medical Education*, by J. Charvat, C. McGuire & V. Parsons (F)
- 37 *The Assessment of Biological Age in Man*, by F. Bourlière (E, S)
- 38 *Problems in Community Wastes Management*, by H. M. Ellis, W. E. Gilbertson, O. Jaag, D. A. Okun, H. I. Shuval & J. Sumner (E, F, S)
- 39 *Postgraduate Education for Medical Personnel in the USSR* (E, F, S)
- 40 *Principles and Practice of Cholera Control* (E, F)

TECHNICAL REPORT SERIES

- 388 *Exercise Tests in Relation to Cardiovascular Function*, report of a WHO Meeting (R)
- 392 *Organization of Services for the Mentally Retarded*, fifteenth report of the WHO Expert Committee on Mental Health (R)
- 402 *Genetics of the Immune Response*, report of a WHO Scientific Group (R)
- 403 *Principles for the Clinical Evaluation of Drugs*, report of a WHO Scientific Group (R)
- 404 *Water Pollution Control in Developing Countries*, report of a WHO Expert Committee (R)
- 405 *Nutritional Anaemias*, report of a WHO Scientific Group (R)
- 406 *Research into Environmental Pollution*, report of five Scientific Groups (R, S)
- 412 *Health Factors Involved in Working under Conditions of Heat Stress*, report of a WHO Scientific Group (R)

- 414 *Cholera Immunology*, report of a WHO Scientific Group (R)
- 417 *Pesticide Residues in Food*, report of the 1968 Joint FAO/WHO Meeting (F, S)
- 418 *WHO Expert Committee on Specifications for Pharmaceutical Preparations*, twenty-second report (R, S)
- 421 *Amoebiasis*, report of a WHO Expert Committee (R, S)
- 422 *Early Detection of Cancer*, report of a WHO Expert Committee (S)
- 423 *Cell-Mediated Immune Responses*, report of a WHO Scientific Group (S)
- 424 *Developments in Fertility Control*, report of a WHO Scientific Group (S)
- 425 *International Drug Monitoring: The Role of the Hospital*, report of a WHO Meeting (S)
- 426 *Principles for the Testing and Evaluation of Drugs for Carcinogenicity*, report of a WHO Scientific Group (S)
- 427 *Biochemistry of Mental Disorders*, report of a WHO Scientific Group (S)
- 428 *The Organization and Administration of Maternal and Child Health Services*, fifth report of the WHO Expert Committee on Maternal and Child Health (S)
- 429 *Statistics of Health Services and of their Activities*, thirteenth report of the WHO Expert Committee on Health Statistics (S)
- 430 *Specifications for the Identity and Purity of Food Additives and their Toxicological Evaluation: Some Antibiotics*, twelfth report of the Joint FAO/WHO Expert Committee on Food Additives (S)
- 431 *Toxoplasmosis*, report of a WHO Meeting of Investigators (S)
- 432 *Research in Health Education*, report of a WHO Scientific Group (S)
- 433 *Parasitology of Malaria*, report of a WHO Scientific Group (F)
- 434 *African Trypanosomiasis*, report of a Joint FAO/WHO Expert Committee (S)
- 435 *Biological Components of Human Reproduction: Studies of their Variations in Population Groups*, report of a WHO Scientific Group (S)
- 436 *Optimum Physical Performance Capacity in Adults*, report of a WHO Scientific Group (F, S)
- 437 *WHO Expert Committee on Drug Dependence*, seventeenth report (E, F, S)
- 438 *Genetic Factors in Congenital Malformations*, report of a WHO Scientific Group (E, F)
- 439 *National Environmental Health Programmes: Their Planning, Organization and Administration*, report of a WHO Expert Committee (E, F, S)

¹ The language of issue is denoted as follows: C = Chinese; E = English; F = French; P = Portuguese; R = Russian; S = Spanish; E-F = English and French; E/F, E/S = Bilingual edition.

- 440 *Programmes of Analysis of Mortality Trends and Levels*, report of a Joint United Nations/WHO Meeting (E, F, S)
- 441 *The Pathological Diagnosis of Acute Ischaemic Heart Disease*, report of a WHO Scientific Group (E, F, S)
- 442 *Health Aspects of Family Planning*, report of a WHO Scientific Group (E, F, S)
- 443 *Insecticide Resistance and Vector Control*, seventeenth report of the WHO Expert Committee on Insecticides (E, F)
- 444 *WHO Expert Committee on Biological Standardization*, twenty-second report (E, F)
- 445 *Specifications for the Identity and Purity of Food Additives and their Toxicological Evaluation: Some Food Colours, Emulsifiers, Stabilizers, Anticaking Agents, and Certain Other Substances*, thirteenth report of the Joint FAO/WHO Expert Committee on Food Additives (E, F, S)
- 446 *Clinical Pharmacology: Scope, Organization, Training*, report of a WHO Study Group (E, F, S)
- 447 *WHO Expert Committee on Plague*, fourth report (E, F, S)
- 448 *Factors Regulating the Immune Response*, report of a WHO Scientific Group (E, F)
- 449 *Dental Health Education*, report of a WHO Expert Committee (E, F, S)
- 450 *Biological Research in Schizophrenia*, report of a WHO Scientific Group (E, F)
- 451 *Wholesomeness of Irradiated Food with Special Reference to Wheat, Potatoes and Onions*, report of a Joint FAO/IAEA/WHO Expert Committee (E, F, S)
- 452 *Requirements of Ascorbic Acid, Vitamin D, Vitamin B₁₂, Folate, and Iron*, report of a Joint FAO/WHO Expert Group (E, F)
- 453 *Joint FAO/WHO Expert Committee on Milk Hygiene*, third report (E, F)
- 454 *Multipurpose Serological Surveys and WHO Serum Reference Banks*, report of a WHO Scientific Group (E, F)
- 455 *Treponematoses Research*, report of a WHO Scientific Group (E, F)
- 456 *Training in National Health Planning*, report of a WHO Expert Committee (E, F)
- 457 *Prevention of Perinatal Mortality and Morbidity*, report of a WHO Expert Committee (E, F)
- 458 *Pesticide Residues in Food*, report of the 1969 Joint FAO/WHO Meeting (E)
- 459 *WHO Expert Committee on Leprosy*, fourth report (E, F)
- 460 *WHO Expert Committee on Drug Dependence*, eighteenth report (E, F)
- 461 *Spontaneous and Induced Abortion*, report of a WHO Scientific Group (E, F)

OFFICIAL RECORDS SERIES

- 173 *Executive Board, Forty-third Session*
Part I — Resolutions, Annexes (R)
- 174 *Executive Board, Forty-third Session*
Part II — Report on the Proposed Programme and Budget Estimates for 1970 (R)
- 178 *Executive Board, Forty-fourth Session* (R)
- 179 *Proposed Programme and Budget Estimates for 1971* (R)

- 180 *The Work of WHO, 1969*
Annual Report of the Director-General (E, F, R, S)
 - 181 *Executive Board, Forty-fifth Session*
Part I — Resolutions, Annexes (E, F, S)
 - 182 *Executive Board, Forty-fifth Session*
Part II — Report on the Proposed Programme and Budget Estimates for 1971 (E, F, S)
 - 183 *Financial Report, 1 January-31 December 1969, and Report of the External Auditor* (E, F, S)
 - 184 *Twenty-third World Health Assembly*
Part I — Resolutions and Decisions, Annexes (E, F, S)
 - 185 *Twenty-third World Health Assembly*
Part II — Plenary Meetings: Verbatim Records. Committees: Summary Records and Reports (E, F, S)
 - 186 *Executive Board, Forty-sixth Session* (E, F, S)
 - 187 *Proposed Programme and Budget Estimates for 1972* (E, F, S)
- Basic Documents*, twenty-first edition (E, F, S)
- Handbook of Resolutions and Decisions*, tenth edition (R)

NON-SERIAL PUBLICATIONS

- Health Aspects of Chemical and Biological Weapons*, report of a WHO Group of Consultants (E, F)
- World Directory of Schools of Public Health, 1965* (F)
- International Histological Classification of Tumours No. 3: Histological Typing of Soft Tissue Tumours* (F, S)
- Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death*, Based on the Recommendations of the Eighth Revision Conference, 1965, and Adopted by the Nineteenth World Health Assembly, Volume 2, Alphabetical Index (F, S)
- Applications of Mental Health Statistics. Uses in Mental Health Programmes of Statistics Derived from Psychiatric Services and Selected Vital and Morbidity Records*, by Morton Kramer (F)
- Measurement of Air Pollutants. Guide to the Selection of Methods*, by M. Katz (F)
- Specifications for Pesticides Used in Public Health — Insecticides — Rodenticides — Molluscicides — Repellents — Methods*, third edition (S)
- Mortality from Malignant Neoplasms, 1955-1965, Parts I and II* (E/F)
- Conquest of Deficiency Diseases. Achievements and Prospects*, by W. R. Aykroyd (E, F, S)
- Guide to the Laboratory Diagnosis of Smallpox for Smallpox Eradication Programmes* (R)
- The Environmental Radiation Surveillance Laboratory. A Guide to Design, Layout, Staff and Equipment Requirements*, by P. R. Kamath (E)
- International Medical Guide for Ships* (R, S)
- The Education and Training of Engineers for Environmental Health*, by J. Cassel et al. (E)
- Public Health Implications of Radioactive Waste Releases*, by C. P. Staub (E)
- European Standards for Drinking-Water*, second edition (E)
- Medical Research. Priorities and Responsibilities* [Proceedings of a CIOMS round-table conference] (E, F)

PERIODICALS

World Health

Monthly (E, F, P, R, S)

WHO Chronicle

Volume 24, No. 1-12 (E, F, S)

Volume 24, No. 1-7 (R)

Volume 24, No. 1-4 (C)

Bulletin of the World Health Organization

Volume 40, No. 1-6 (R)

Volume 41, No. 1-6 (E-F)

Volume 41, No. 1-2 (R)

Volume 42, No. 1-6 (E-F)

Volume 43, No. 1-4 (E-F)

*Supplement to the Bulletin**Dependence Liability of "Non-Narcotic" Drugs*, by H. Isbell and T. L. Chrusciel (E)*International Digest of Health Legislation*

Volume 20, No. 4 (E, F)

Volume 21, No. 1-2 (E, F)

World Health Statistics Report

Volume 22, No. 10-12 (E/F)

Volume 23, No. 1-11 (E/F)

World Health Statistics Annual

1966 — Volume II (E/F)

1966 — Volume III (E/F)

1967 — Volume I (E/F)

1967 — Volume II (E/F)

TRANSLATED WHO PUBLICATIONS ISSUED BY OTHER PUBLISHERS IN 1970¹*Public Health Papers*

Language

33 *The Physiological Basis of Health Standards for Dwellings*, by M. S. Goromoso

Serbo-Croat

36 *A Review of the Nature and Uses of Examinations in Medical Education*, by J. Charvat, C. McGuire & V. Parsons

German

Technical Report Series

Language

386 *Hormonal Steroids in Contraception*, report of a WHO Scientific Group

Finnish

389 *Morbidity Statistics*, twelfth report of the WHO Expert Committee on Health Statistics

German

*Non-serial publications**International Medical Guide for Ships*

Greek

PUBLICATIONS ISSUED BY THE PAN AMERICAN HEALTH ORGANIZATION IN 1970

SCIENTIFIC PUBLICATIONS SERIES

162 *Profilaxia das Doenças Transmissíveis*, second printing (P)183 *Argentine Haemorrhagic Fever: Current Knowledge*, by Norma E. Mettler (S)194 *Elements of a Food and Nutrition Policy in Latin America* (E)195 *Report of a Study Group on Chagas' Disease* (E, S)196 *II Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control* (E, S)197 *Control de enfermedades infecciosas en hospitales generales* (S)198 *Hypovitaminosis A in the Americas*—Report of a PAHO Technical Group Meeting (E, S)199 *Reported Cases of Notifiable Diseases in the Americas, 1967* (E, S)200 *Seminario Regional de Silicosis* (S)201 *Coordination of Medical Care* — Final report and working documents of a Study Group (E, S)202 *Enfermedades parasitarias de origen hídrico* (S)203 *Fluoruración del agua potable*, by F. J. Maier (S)204 *Maternal Nutrition and Family Planning in the Americas*—Report of a PAHO Technical Group Meeting (E, S)205 *International Symposium on Mycoses* (E, S)206 *Clasificación Internacional de Enfermedades, aplicada a odontología y estomatología* (S)207 *Health Conditions in the Americas 1965-1968* (E, S)208 *Financing of the Health Sector*—Technical Discussions of the XIX Meeting of the Directing Council of PAHO (E, S)209 *Factores ambientales que determinan el bienestar de la comunidad* (S)210 *Working Group on Administration of Psychiatric and Mental Health Services* (E, S)211 *Regional Advisory Committee on Computers in Health* (E, S)212 *Cataratas y glaucoma* (S)213 *Grupo de Estudio sobre Capacitación de Especialistas en Medicina Física y Rehabilitación* (S)214 *Encuesta epidemiológica de la sífilis* (S)215 *Seminario sobre Registros de Cáncer en América Latina* (S)

OFFICIAL DOCUMENTS SERIES

97 *Financial Report of the Director and Report of the External Auditor, 1969* (E, S)98 *Proposed Program and Budget Estimates*—Pan American Health Organization, 1971; World Health Organization,¹ Publications translated and issued by publishers to whom translation rights had been granted by WHO. The Organization does not accept responsibility for these translations or undertake their distribution.

- Region of the Americas, 1972; Pan American Health Organization, Provisional Draft, 1972* (E, S)
- 99 *Final Report, PAHO Directing Council, XIX Meeting; WHO Regional Committee, XXI Meeting* (E/S)
- 100 *PAHO Directing Council, XIX Meeting; WHO Regional Committee, XXI Meeting—Précis Minutes and Annexes* (E, S)
- 101 *Quadrennial Report of the Director of the Pan American Sanitary Bureau, Regional Office of the World Health Organization, 1966-1969* (E, S)
- 102 *Annual Report of the Director of the Pan American Sanitary Bureau, Regional Office of the World Health Organization, 1969* (E, S)
- 103 *Executive Committee of the Pan American Health Organization, 62nd, 63rd, and 64th Meetings—Final Reports and Précis Minutes* (E, S)
- 104 *Basic Documents of PAHO, ninth edition* (1970) (E, S)
- 105 *Final Report, XVIII Pan American Sanitary Conference, XXII Meeting of the Regional Committee of WHO for the Americas* (E/S)

OTHER PUBLICATIONS

- Guidelines for the Development of Dental Curricula* (E, S)
- Health Agenda for the Americas*, by Dr Abraham Horwitz (E, S)

Annex 11

WHO LIBRARY STATISTICS, 1970

Acquisitions

Periodicals received:		
by subscription	845	
by exchange with WHO publications	1 427	
by gift	836	3 108
Annual reports received	2 472	
Books and pamphlets ordered	1 490	
Books and pamphlets received	4 146	
Volumes bound	2 310	

Catalogue

Titles catalogued	2 179
Articles in journals indexed	13 924
Documents indexed	6 377
Index cards filed	69 089
Index cards distributed to Headquarters Secretariat and Regional Offices	250 151

Loans

Lent to WHO Secretariat	11 089
Lent to other libraries	5 308
Borrowed from other libraries	1 954
Periodicals circulated to WHO Secretariat	77 343
Photocopying (number of exposures)	135 615
Items consulted in reading rooms	47 261

Medical literature supply

Orders placed for:

Headquarters Secretariat (number)	519
(items)	1 170
Regional Offices (number)	2 046
(items)	12 477
Duplicates distributed to Regional Offices and to other libraries	1 538

Annex 12

NON-GOVERNMENTAL ORGANIZATIONS IN OFFICIAL RELATIONS WITH WHO

at 31 December 1970¹

Biometric Society	International Planned Parenthood Federation
Christian Medical Commission	International Society of Biometeorology
Council for International Organizations of Medical Sciences	International Society of Blood Transfusion
Inter-American Association of Sanitary Engineering	International Society for Burn Injuries
International Academy of Legal Medicine and of Social Medicine	International Society of Cardiology
International Air Transport Association	International Society for Criminology
International Association for Accident and Traffic Medicine	International Society of Hematology
International Association for Child Psychiatry and Allied Professions	International Society of Orthopaedic Surgery and Traumatology
International Association of Logopedics and Phoniatrics	International Society of Radiographers and Radiological Technicians
International Association of Microbiological Societies	International Society of Radiology
International Association for Prevention of Blindness	International Society for Rehabilitation of the Disabled
International Astronautical Federation	International Union of Architects
International Brain Research Organization	International Union against Cancer
International Commission on Radiological Protection	International Union for Child Welfare
International Commission on Radiation Units and Measurements	International Union for Health Education
International Committee of Catholic Nurses	International Union of Local Authorities
International Committee of the Red Cross	International Union of Nutritional Sciences
International Confederation of Midwives	International Union of Pharmacology
International Council on Alcohol and Addictions	International Union of Pure and Applied Chemistry
International Council on Jewish Social and Welfare Services	International Union of School and University Health and Medicine
International Council of Nurses	International Union against Tuberculosis
International Council of Scientific Unions	International Union against the Venereal Diseases and the Treponematoses
International Council on Social Welfare	International Water Supply Association
International Council of Societies of Pathology	Joint Commission on International Aspects of Mental Retardation
International Dental Federation	League of Red Cross Societies
International Diabetes Federation	Medical Women's International Association
International Epidemiological Association	Permanent Commission and International Association on Occupational Health
International Federation of Gynecology and Obstetrics	Transplantation Society
International Federation for Housing and Planning	World Confederation for Physical Therapy
International Federation for Medical and Biological Engineering	World Federation of the Deaf
International Federation of Medical Student Associations	World Federation of Hemophilia
International Federation of Multiple Sclerosis Societies	World Federation for Mental Health
International Federation of Physical Medicine	World Federation of Neurology
International Federation of Sports Medicine	World Federation of Occupational Therapists
International Federation of Surgical Colleges	World Federation of Societies of Anaesthesiologists
International Fertility Association	World Federation of United Nations Associations
International Hospital Federation	World Medical Association
International Hydatidological Association	World Psychiatric Association
International League of Dermatological Societies	World Union OSE
International League against Rheumatism	World Veterans Federation
International Leprosy Association	World Veterinary Association
International Organization against Trachoma	
International Paediatric Association	
International Pharmaceutical Federation	

INTERGOVERNMENTAL ORGANIZATIONS WHICH HAVE ENTERED INTO FORMAL AGREEMENTS WITH WHO APPROVED BY THE WORLD HEALTH ASSEMBLY

International Committee of Military Medicine and Pharmacy	Organization of African Unity
International Office of Epizootics	United International Bureaux for the Protection of Intellectual Property
League of Arab States	

¹ In addition, official relations were established in January 1971, by virtue of resolution EB47.R52 adopted by the Executive Board at its forty-seventh session, with the following non-governmental organizations: International Association of Agricultural Medicine, International Association of Medical Laboratory Technologists, International Federation of Pharmaceutical Manufacturers Associations, International League against Epilepsy, International Organization for Standardization, International Solid Wastes and Public Cleansing Association, World Federation of Public Health Associations.

Annex 13

REGULAR BUDGET FOR 1970

<i>Appropriation Section</i>	<i>Purpose of Appropriation</i>	<i>Amount voted¹ US \$</i>	<i>Appropriation Section</i>	<i>Purpose of Appropriation</i>	<i>Amount voted¹ US \$</i>
PART I: ORGANIZATIONAL MEETINGS			PART III: ADMINISTRATIVE SERVICES		
1.	World Health Assembly	474 200	7.	Administrative Services	4 169 404
2.	Executive Board and its Committees . .	217 600			
3.	Regional Committees	130 000		Total — Part III	4 169 404
	Total — Part I	821 800			
PART II: OPERATING PROGRAMME			PART IV: OTHER PURPOSES		
4.	Programme Activities	55 968 894	8.	Headquarters Building Fund	511 200
5.	Regional Offices	5 872 902	9.	Revolving Fund for Teaching and Laboratory Equipment	100 000
6.	Expert Committees	205 800		Total — Part IV	611 200
	Total — Part II	62 047 596		EFFECTIVE WORKING BUDGET (PARTS I, II, III AND IV)	67 650 000

¹ Resolution WHA22.33

Annex 14

NUMBERS AND DISTRIBUTION OF THE STAFF
at 30 November 1969 and 30 November 1970

Distribution	Staff as at 30 November 1969					Staff as at 30 November 1970				
	Total	Regular Budget	Other sources	Voluntary Funds	IARC ^a	Total	Regular Budget	Other sources	Voluntary Funds	IARC ^a
Headquarters ^b										
Internationally recruited	467					469				
Locally recruited	667					696				
	1 134	1 065	59	10	—	1 165	1 080	78	7	—
Regional Offices										
<i>Africa</i>										
Internationally recruited	54					57				
Locally recruited	229					235				
	283	281	2	—	—	292	287	5	—	—
<i>The Americas</i>										
Internationally recruited	33					37				
Locally recruited	49					52				
	82	78	4	—	—	89	85	4	—	—
<i>South-East Asia</i>										
Internationally recruited	35					35				
Locally recruited	141					149				
	176	176	—	—	—	184	184	—	—	—
<i>Europe</i>										
Internationally recruited	46					50				
Locally recruited	108					111				
	154	147	7	—	—	161	154	7	—	—
<i>Eastern Mediterranean</i>										
Internationally recruited	41					39				
Locally recruited	106					109				
	147	147	—	—	—	148	148	—	—	—
<i>Western Pacific</i>										
Internationally recruited	33					33				
Locally recruited	83					88				
	116	116	—	—	—	121	120	1	—	—
WHO Representatives' and Zone Offices										
Internationally recruited	43					40				
Locally recruited	101					109				
	144	144	—	—	—	149	149	—	—	—

^a International Agency for Research on Cancer.^b Including liaison offices.

Annex 14 (continued)

Distribution	Staff as at 30 November 1969					Staff as at 30 November 1970				
	Total	Regular Budget	Other sources	Voluntary Funds	IARC ^a	Total	Regular Budget	Other sources	Voluntary Funds	IARC ^a
Field Staff in Countries										
Internationally recruited	893					912				
Locally recruited	54					61				
	947	619	321 ^c	7	—	973	680	293 ^d	—	—
Other Offices										
International Agency for Research on Cancer:										
Internationally recruited	24					34				
Locally recruited	28					41				
	52	—	—	—	52	75	—	—	—	75
Inter-Regional Activities										
Internationally recruited	71					70				
Locally recruited	11					20				
	82	48	9	25	—	90	62	4	24	—
	3 317	2 821	402	42	52	3 447	2 949	392	31	75
Staff on loan to WHO, or on leave without pay	51					50				
Short-term consultants	196					213				
WHO GRAND TOTAL	3 564					3 710				
PAHO GRAND TOTAL	984					1 011				

^a International Agency for Research on Cancer.^c Including 24 agents in the Democratic Republic of the Congo.^d Including 9 agents in the Democratic Republic of the Congo.

Annex 15

COMPOSITION OF THE STAFF BY NATIONALITY
at 30 November 1970

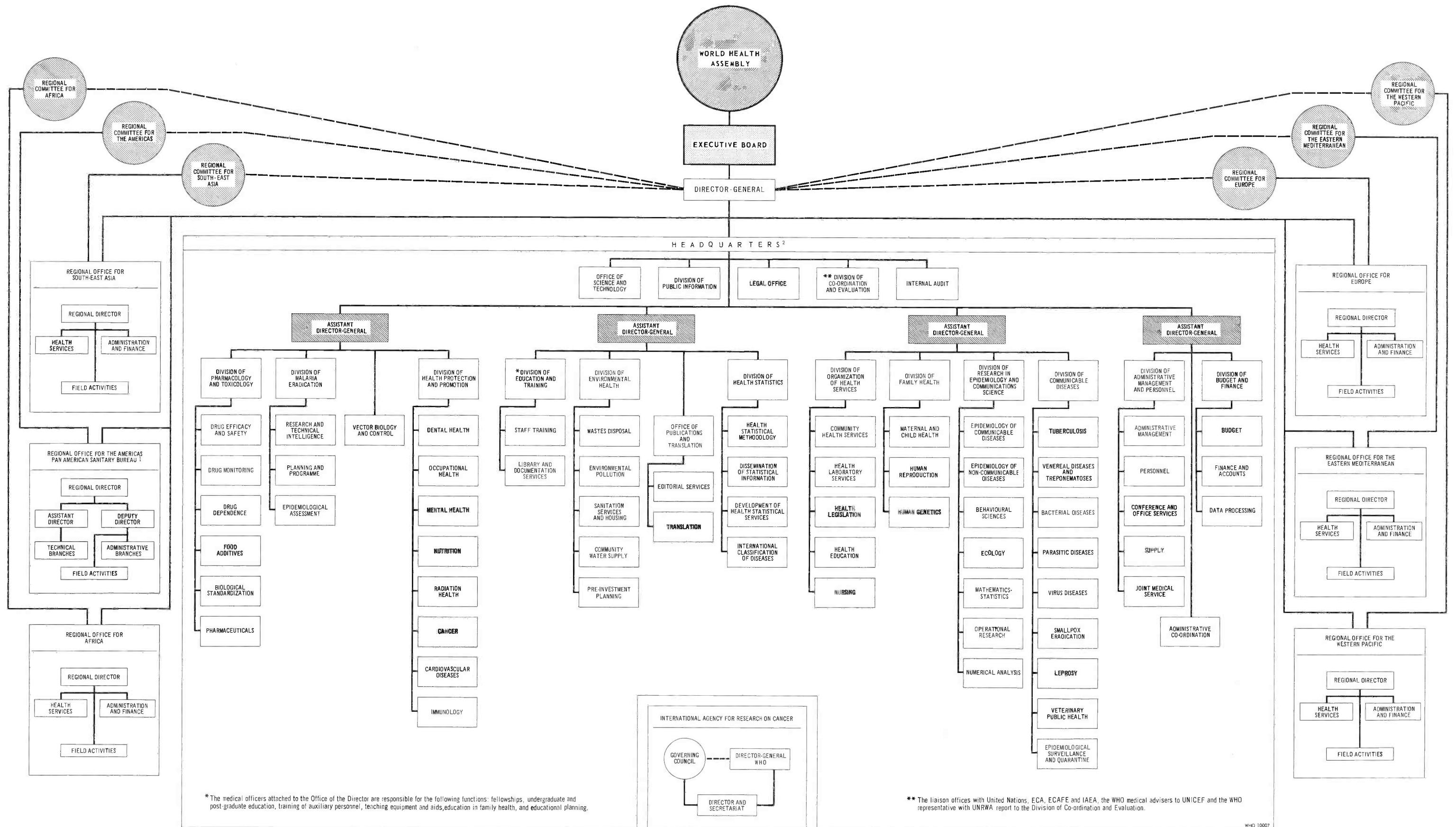
Country	WHO	PAHO	Total
Afghanistan	2	0	2
Argentina	22	24	46
Australia	32	0	32
Austria	14	0	14
Barbados	1	0	1
Belgium	35	3	38
Bolivia	9	9	18
Brazil	20	29	49
Bulgaria	6	0	6
Burma	3	0	3
Burundi	1	0	1
Cameroon	4	0	4
Canada	64	1	65
Ceylon	15	0	15
Chile	20	36	56
China	19	2	21
Colombia	18	23	41
Costa Rica	6	15	21
Cuba	3	4	7
Cyprus	4	0	4
Czechoslovakia	29	0	29
Dahomey	5	0	5
Denmark	25	1	26
Dominican Republic	0	3	3
Ecuador	8	10	18
El Salvador	1	5	6
Ethiopia	1	0	1
Federal Republic of Germany	51	2	53
Finland	6	0	6
France	121	2	123
Gambia	1	0	1
Ghana	4	0	4
Greece	16	0	16
Guatemala	6	32	38
Guyana	1	0	1
Haiti	20	0	20
Honduras	2	2	4
Hungary	8	0	8
India	51	2	53
Indonesia	7	0	7
Iran	11	0	11
Iraq	8	0	8
Ireland	16	2	18
Israel	9	2	11
Italy	48	0	48
Jamaica	6	1	7
Japan	15	0	15
Jordan	12	0	12
Lebanon	19	0	19
Liberia	2	0	2
Luxembourg	1	0	1
Madagascar	2	0	2
Malta	3	0	3
Mauritius	6	0	6
Mexico	9	16	25
Morocco	3	0	3
Nepal	6	0	6

Country	WHO	PAHO	Total
Netherlands	31	1	32
New Zealand	15	0	15
Nicaragua	1	2	3
Nigeria	9	0	9
Norway	13	1	14
Pakistan	18	0	18
Panama	3	2	5
Paraguay	5	2	7
Peru	16	22	38
Philippines	24	1	25
Poland	25	0	25
Portugal	6	2	8
Republic of Korea	13	0	13
Romania	9	0	9
Senegal	2	0	2
Sierra Leone	1	0	1
Singapore	1	0	1
Somalia	1	0	1
South Africa	1	0	1
Spain	18	7	25
Sudan	8	0	8
Sweden	26	0	26
Switzerland	44	1	45
Syria	12	0	12
Thailand	2	0	2
Togo	4	0	4
Trinidad and Tobago	9	2	11
Tunisia	3	0	3
Turkey	4	0	4
Union of Soviet Socialist Republics	43	0	43
United Arab Republic	41	0	41
United Kingdom of Great Britain and Northern Ireland	173	13	186
United Republic of Tanzania	4	0	4
United States of America	178	81	259
Uruguay	4	11	15
Venezuela	2	8	10
Viet-Nam	4	0	4
Yemen	1	0	1
Yugoslavia	37	1	38
Zambia	1	0	1
Stateless	1	0	1
TOTAL	1 650	383	2 033
International Agency for Research on Cancer	34	0	34
Geographically excepted posts	128	0	128
Short-term consultants	213	24	237
Agents in the Democratic Republic of the Congo	9	0	9
Staff locally recruited	1 676	604	2 280
GRAND TOTAL	3 710	1 011	4 721

Annex 16

STRUCTURE OF THE WORLD HEALTH ORGANIZATION

at 31 December 1970





THE WORK OF WHO, 1970

ANNUAL REPORT OF THE DIRECTOR-GENERAL
TO THE
WORLD HEALTH ASSEMBLY AND TO THE UNITED NATIONS

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GENEVA

April 1971

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